

SEPTEMBER 1959

Material

Handling

ENGINEERING

Established in 1945 as FLOW Magazine

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Pneumatic Conveyors
page 66

The Never-Idle Tractor
page 72

Facts About Steel Strapping
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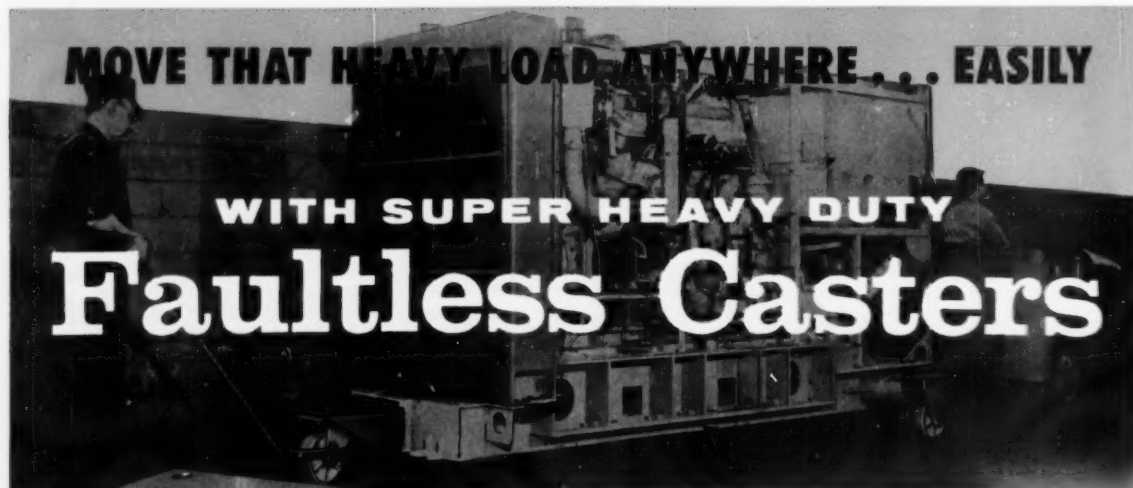
STEVENS RICE
UNIVERSITY MICROFILMS
313 NORTH FIRST ST
ANN ARBOR MICH 48106
FIZ

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WITH HOISTS...** page 74

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Market Survey-**
following page 138

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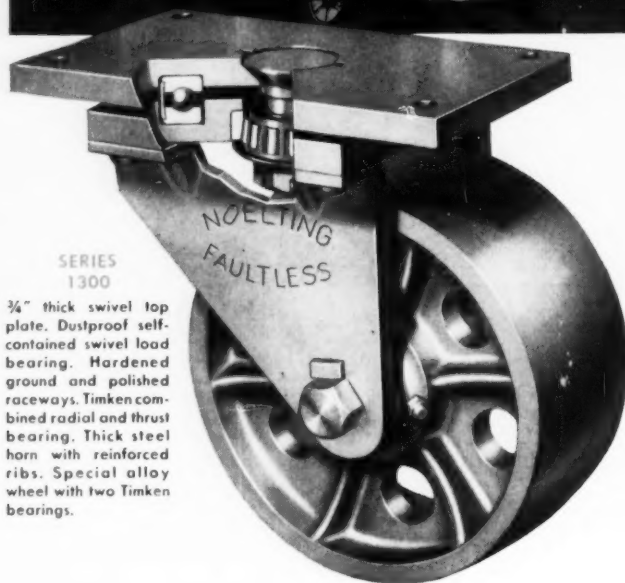
The original publication of the material handling industry, preferred by identified buyers of material handling, packaging and shipping equipment and supplies.



MOVE THAT HEAVY LOAD ANYWHERE... EASILY

WITH SUPER HEAVY DUTY

Faultless Casters



**SERIES
1300**

¾" thick swivel top plate. Dustproof self-contained swivel load bearing. Hardened ground and polished raceways. Timken combined radial and thrust bearing. Thick steel horn with reinforced ribs. Special alloy wheel with two Timken bearings.

Dreadnaught Casters move loads up to

7½ Tons
PER CASTER

When it comes to *CASTER STRENGTH* for rolling the big loads along your assembly line, or around your stock pile area, Faultless engineered casters can give a lift to your big production and warehousing problems. Above, a Faultless Series 1300 Swivel Plate Caster and two Faultless wheels in special mountings easily handle a 22,000 lb. Caterpillar Diesel-electric engine with minimum man-power. This is a usual task for the Faultless Series 1300 Dreadnaught Caster.

Super strong HX300 Casters handle loads up to

5 Tons PER CASTER
WITH 8" WHEEL

For surplus strength to roll under cargoes that break down or damage ordinary casters, the HX300 Series, extra heavy duty swivel caster, will fit your specifications. It's precisely engineered throughout and constructed of quality materials to provide a caster capable of easily taking on 10,000 lb. loads, while keeping production lines moving with minimum handling costs.



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HX300**

1" dia. king pin. Thick steel top plate. Self-contained main load bearing has dust guard and grease seal. Timken radial and thrust bearing. 8" or 10" semi-steel wheels with Timken bearings.



ASK YOUR DISTRIBUTOR: Your nearby Faultless Industrial Distributor maintains a substantial inventory of Faultless Casters for immediate delivery. He and one of the strategically located Faultless Sales Engineers are available to work with you on every handling problem in your plant. Both are listed in the phone book Yellow Pages, under "Casters," and the Faultless heading.

Faultless Caster Corporation, Evansville 7, Indiana

Representatives in Atlanta, Baltimore, Boston, Buffalo, Chicago, Cleveland, Dallas, Detroit, Grand Rapids, Greenville, S. C., High Point, Indianapolis, Los Angeles, New Orleans, New York, Philadelphia, Portland, St. Louis, Washington, D. C., Canada: Stratford, Ontario



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Lug Industrial Pneumatic Tire from Goodyear—a rugged performer from any angle!



NEW VIEW ON TIRE VALUE

Photographed through glass, this rugged Lug Industrial Tire by Goodyear tells quite a story.

Instantly, you see why this tire gives superior traction on slick, slippery surfaces. Goodyear's famous Lug tread design provides that extra *grip-ping* power—makes this tire ideal for use wherever sure-footed traction is required.

And since this is a *pneumatic* tire, it has the side-wall flexibility, smoothness and flotation that assure safe haulage of cargoes which *must* be handled with care.

There's terrific strength and stamina in this tire,

too—provided by Goodyear's 3-T Cord that's triple-tempered in an exclusive process, involving Tension, Temperature and Time, for longer tire life, lower cost in the long run.

GET ALL THE FACTS on the Lug Industrial and the complete line of Goodyear Pneumatic and Solid Industrial Tires from your Goodyear Dealer. Or write:

Goodyear, Industrial Tire
Sales, Akron 16, Ohio.



INDUSTRIAL TIRES BY

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

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SEPTEMBER, 1959




**meet
the new
money-saver**

DISOWHEEL "STANDARDS"!

— available now for general industrial applications. Made of amazing DISOGRIN®, our unique polyurethane elastomer, DISOWHEEL® "STANDARDS" last 4 to 10 times longer than rubber... won't mark, crack or splinter floors... assure smoother, spill-free rides... carry bigger loads... cut costly downtime!

DISOWHEEL "STANDARDS," the perfect wheels for all industrial uses, are equipped with their own high grade roller bearings, are easy to

fit and rarely need replacing. "STANDARDS" are now in stock, ready for delivery in all sizes listed by the Caster and Floor Truck Manufacturers Association.

For hand trucks, trailer trains, conveyors, rolling cranes, or anywhere a wheel is needed, you'll find that DISOWHEEL will prove unbeatable. Order now—and be sure to specify DISOWHEEL, "strong as steel, resilient as rubber," with the distinctive  emblem.

Send for free brochure—write today to:

DISOGRIN INDUSTRIES

510 SOUTH FULTON AVENUE, MOUNT VERNON, NEW YORK

Offices: Los Angeles • Boston • Chicago • Detroit • Cleveland • Washington • Distributors everywhere

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MATERIAL HANDLING ENGINEERING



COVER: Hoists are used almost everywhere. In almost every industry you'll find them on the shipping dock, in the production area, in the yard, in the warehouse. In the article, "Handling with Hoists," on page 74, MHE's editors tell you about factors you should consider in selecting hoists. MHE's hoist survey, on page 139, gives you a chance to help finish the article.

FEATURES

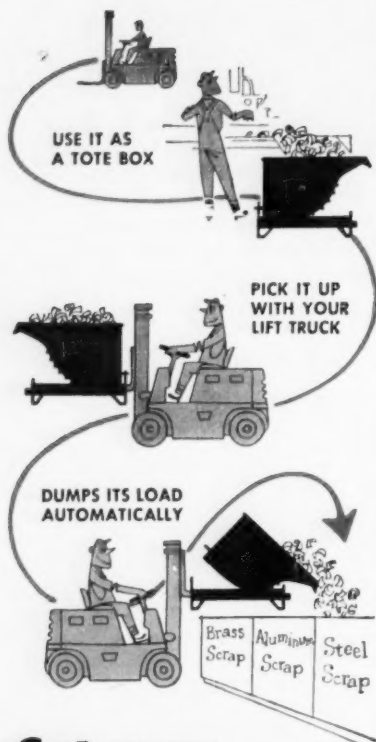
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Number 5 in the MHE Conveyor Series.
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Saves handling, boosts production, and adds to customer convenience.
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Selection factors you must consider before buying a hoist.
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How overhead hoists and storage racks make use of free air rights.
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These standards will help the user select hand and tow line trucks.

PACKAGING SHIPPING

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A line-up of tensioners and sealers, and a view of strapping automation.
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The right hardware may make you a strapping expert.
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Advantages of all kinds of collapsibles, and new ways to use them.
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Packaging and shipping idea of the month.



reader's guide continues on next page



Cut your scrap-handling costs 50%

Handling scrap metal is a simple, one-man operation when you use Roura Self-Dumping Hoppers. Place them in strategic spots for scrap collection. One man with a lift truck carries them to scrap bins or freight car . . . flips the latch and the hopper automatically dumps its load, rights itself, locks itself, and it is ready for another load. Hoppers may be labelled for different kinds of scrap for easy, profitable scrap segregation. No wonder they're cutting costs in hundreds of plants.

Forks or platform of any standard lift truck slip easily into under-frame of a Roura Hopper. Pick-up is swift and simple. Hoppers are made in five sizes, $\frac{1}{2}$ to 2 yard capacity, and mounted on live or semi-live skids with choice of wheels.

They're made of $\frac{3}{16}$ " steel plate with continuous arc-welded seams. Good for years of toughest service. Standard models shipped from stock immediately. Also available in stainless steel and galvanized. Start now cutting costs with Roura.

ROURA

Self-Dumping

HOPPER

WANT DETAILS?

Clip this coupon . . . attach it to your letter-head . . . sign your name . . . and mail to . . .

ROURA IRON WORKS, INC.

1411 Woodland Ave., Detroit 11, Mich.

Circle 154 on Reader Service Card

Material Handling Engineering

volume 14 number 12

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published monthly by
THE INDUSTRIAL PUBLISHING CORPORATION
812 Huron Road, Cleveland 15, Ohio

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United States and possessions: \$7 one year, \$12 two years. United Kingdom: £35.0 one year, payable in sterling to our London office. Canada: \$8 one year. Other foreign: \$10 one year. Single copies (when available): one to 10, 75c each; 11 to 25, 60c each; more than 25, 45c each. Canada: 75c each. Foreign: \$1 each.

MATERIAL HANDLING ENGINEERING is indexed by Engineering Index, Inc. Affiliated publications: APPLIED HYDRAULICS & PNEUMATICS, WELDING DESIGN & FABRICATION, MODERN OFFICE PROCEDURES, OCCUPATIONAL HAZARDS, THE REFRIGERATION & AIR-CONDITIONING BUSINESS, WELDING ILLUSTRATED and MATERIAL HANDLING ILLUSTRATED, POWER TRANSMISSION DESIGN.

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NEXT MONTH IN MHE

we'll explore the subject of power in material handling. We'll also present a general article on the subject of yard handling. This is the first of a series. Our Packaging Section will have a study of containers designed for handling. And you'll find an article on cartoning, bundling, and wrapping machines.

NOW

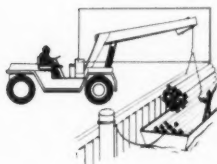
SILENT HOIST KRANE KAR

360° SWING!



360° BOOM ROTATION

Hydraulic Crane revolves on heavy-duty ballbearing Turntable. Special Manifold permits CONTINUAL ROTATION and simultaneous, smooth, positive control of HOISTING, TOPPING, TELESCOPING.



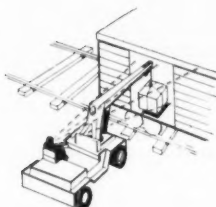
GREATER WORKING REACH

Boom pivoted well forward, **KRANE KAR** provides working reach OF ENTIRE BOOM LENGTH! High Boom Underclearance permits efficient handling of **BULKY LOADS** in box cars, highway trailers, etc.



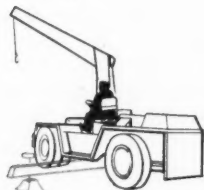
MAXIMUM SAFETY

Dual Traction Tires . . . means high flotation . . . maximum protection against tire blow-out upsets.



"TOTAL VISION" ALL DIRECTIONS

KRANE KAR Operator has UNOBSTRUCTED VISION OF Load and Crane at all times.



"BONUS" CAPACITY

With Hydraulic Outriggers, step up working capacity to 24,000 lbs. **KRANE KAR outproduces, outvalues any other Crane of equal rated capacity.**

5 BIG ADVANTAGES

2 SIZES:

MODEL FAX—12,000 lbs. Cap.

MODEL FAY—20,000 lbs. Cap.

NOW! . . . another addition to this famous family of SILENT HOIST KRANE KARs . . . the original Mobile Power Swing Boom Crane!

SILENT HOIST enters its 41st year of Service to Industry by introducing the all-new KRANE KAR . . . all-hydraulic 360° Continuous Revolving Crane.

For complete details on this unique Crane, write today for illustrated Bulletin No. 99.

SILENT HOIST & CRANE CO.
BROOKLYN 20, N. Y.

TENNANT

Industry's most complete line of POWER SWEEPERS

**TENNANT
Model 40
Sweeper**



HERE IS America's most complete and widely used line of power sweepers... for plants of all sizes.

If your plant is not already using a TENNANT Sweeper, you'll be surprised at its performance... and the savings it can bring you.

FOR CONGESTED AREAS—A compact NEW walk-behind Sweeper (Model 40). Cleans 34" path, turns in its own tracks. Equals "big sweeper" performance for CLEAN sweeping! Sweeps 8 to 18,000 sq. ft. per hour in most plants... or 2 to 5 times faster than a man with a broom. Very powerful brush-and-vacuum system: out-performs any other sweeper of its size for clean, dust-free work. Low priced. Available in gas, LP-gas, and battery-powered models.

FOR SMALL PLANTS — Versatile space-saving Sweeper (Model 53) cleans 40" path on the run. Travels at 1 1/2 to 5 mph, sweeping 3 to 7 times faster than is possible by hand. Rider-type; easy to use. Combined brush and vacuum system instantly removes chips, sand, debris, dirt and dust that pushbrooms can't pick up.

Compact design and easy steering make the "53" ideal for both congested and open areas. Auto-type steering, clutch, and brake. Often pays for itself in 9 to 14 months. Available in both gas or LP-gas models.

**TENNANT
Model 53
Sweeper**



**TENNANT Model 80
Sweeper**



FOR HEAVY DUTY SWEEPING—The superbly engineered Model 80 is industry's choice for rugged, "round-the-clock" sweeping. Has no equal for performance. Cleans 53" path. Sweeps up to 110,000 sq. ft. per hour in open areas, yet is "aisle-designed" to operate efficiently in aisles as narrow as 5 ft.

Easy to operate; starts, stops, reverses instantly. Dirt hopper holds up to 800 lbs., dumps hydraulically in 10 seconds. Gas or LP-gas models; similar battery-powered model available.

FOR MAXIMUM CAPACITY, here is the giant Model 100. Has 3 to 4 times the capacity of smaller sweepers. Cleans 7' 4" path, yet has turning radius of only 10' 2". Hydraulic dump hopper holds almost 2 yards.

Excellent dust control and huge capacity make it ideal for yards, docks, salvage work, large aisles, etc. Nothing else like it!

Write today for illustrated bulletins on Tennant Power Sweepers. Get details on how to reduce your sweeping costs.



**TENNANT
Model 100
Sweeper**

G. H. TENNANT COMPANY, 707 N. Lilac Drive, Minneapolis 22, Minnesota

SPECIALIZED MAINTENANCE EQUIPMENT

POWER SWEEPERS • FLOOR MACHINES • SCARIFIERS • ROOF SCRAPERS • CONCRETE ROUTERS

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LETTERS to the EDITOR

More LPG Requests

SIR:

May we kindly have permission from you to reprint the article, "Ford Motor Company Researches LP-Gas for Industrial Trucks."

This article originally appeared in the May, 1956 issue of FLOW.

John W. Drennen
Ashland Oil & Refining Co.
Ashland, Ky.

One of our most popular articles through the years. Permission granted.

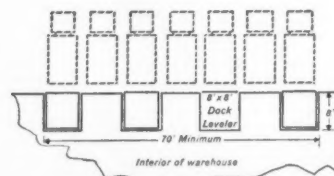
Says Docks Article Ain't So:

SIR:

I read with interest Mr. F. P. Stumpfler's article on Dock Levelers vs. Truck Levelers in the July 1959 issue of MATERIAL HANDLING ENGINEERING. Perhaps I have missed a point, but I do not understand how Mr. Stumpfler can claim a dock space saving in truck levelers over mechanical dock levelers. He claims that with dock levelers the space above the dockboard could not be used for storage without interfering with the use of the dockboard itself. With truck levelers, in order to have access to the truck the same situation would be true except for temporary storage of one or two stacks in front of the truck leveler. I cannot see how this would result in the \$2,000 savings indicated in the article.

Arthur S. Graham
General Foods Corp.
White Plains N.Y.

In arriving at the \$2,000 savings, author Stumpfler used the example of a typical seven-position truck court with four dockboards at alternate positions (see illustration). The total dock space



encompassed by the equipment is 560 square feet more than would be needed if outside dock levelers would be used. This is even more apparent, the author claims, if you look at the space next to the dock edge as an aisle. With truck levelers we can use this space; with dock levelers we can't because of their location. This lost space actually represents new building construction of about \$8,000. Prorated over four dock-boards that equals \$2,000 per board difference. We agree, however, that for permanent storage both limit access to the trucks.

On the Other Hand—

SIR:

Congratulations on the fine article, "Dock Levelers vs. Truck Levelers" in your July issue.

I found it interesting and informative. It should help anybody dealing with this type of problem.

Harold M. Greenhouse
A-B-C Cartage Co.
St. Louis, Mo.

Paperwork Bogs Down:

SIR:

We have a small, but irritating, problem in our operation and it is a method of mechanically conveying copies of our sales orders from the first floor level to the second floor level and return.

These locations are separated by a vertical height of approximately 12 feet and a horizontal distance of about 30 feet. We have quotations on pneumatic tube systems running in the price range of better than \$1,000.

There are other means of moving this paper work in both the vertical and horizontal traveling, but all seem to be pretty expensive to accomplish the end results. It would seem to me that for the travel involved in this operation and the fact that a few sheets of paper (size 8½ x 11) would be traveling at a given time, there must be something on the market to accomplish this movement and certainly costing no more than half the above figure.

S. Warwick
Nopco Chemical Co.
Newark, N.J.


Any readers have ideas?



One Ve-Be-Veyor line loads two trucks at the same time!

At W. C. Romain, Menands, N. Y., these practical Oliver-Farquhar Ve-Be-Veyor Power Belt Conveyors load trucks with remarkable efficiency and flexibility. Swivel caster mountings make it easy for one man to move the V-B's where they're needed. And loading is so easy, so fast that two V-B's are often used to take the load directly to *two* trucks from one main line. Oliver-Farquhar aluminum

Ve-Be-Veyor Power Belt Conveyors are the most versatile units on the market. Available in 12-, 16- and 20-foot lengths, powered by either a 1/3rd hp electric motor or gasoline engine. Whether you are moving bags, boxes, cartons or packages into, around or out of your plant — remember, use Ve-Be-Veyors. They cut time, cut labor costs—every time! Write, wire or phone for details today.

	Mail this Coupon...	The Oliver Corporation A. B. FARQUHAR DIVISION Conveyor Dept. 5-06, York, Penna. Factory Branch: 618 W. Elm St., Chicago 10, Ill. Yes, please send me facts on your conveyors.
	POWER BELT AND GRAVITY CONVEYORS	Name _____ Company Name _____ Street Address _____ City _____ State _____

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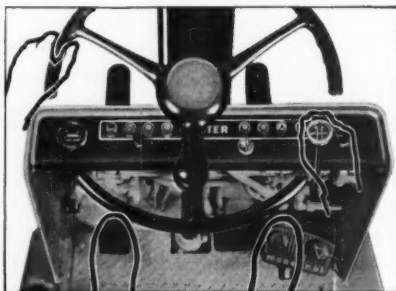


Announced in June—
Hyster monotrol trucks are already at work in
warehouses and industrial plants from coast to coast.

Acceptance of the new Hyster SpaceSaver 3,000, 4,000 and 5,000 lb. trucks with *Monotrol* control system is even exceeding earlier expectations. In warehouses and industrial plants from coast to coast the new Monotrol trucks are setting new standards of production, safety, and handling economy. The ease of moving more tonnage with less operator effort and greater safety is the story being told by each new owner. Contact your Hyster dealer for a demonstration or write to Hyster Company, P. O. Box 847, Danville, Illinois, for the illustrated brochure.



HYSTER COMPANY
INDUSTRIAL TRUCK DIVISION

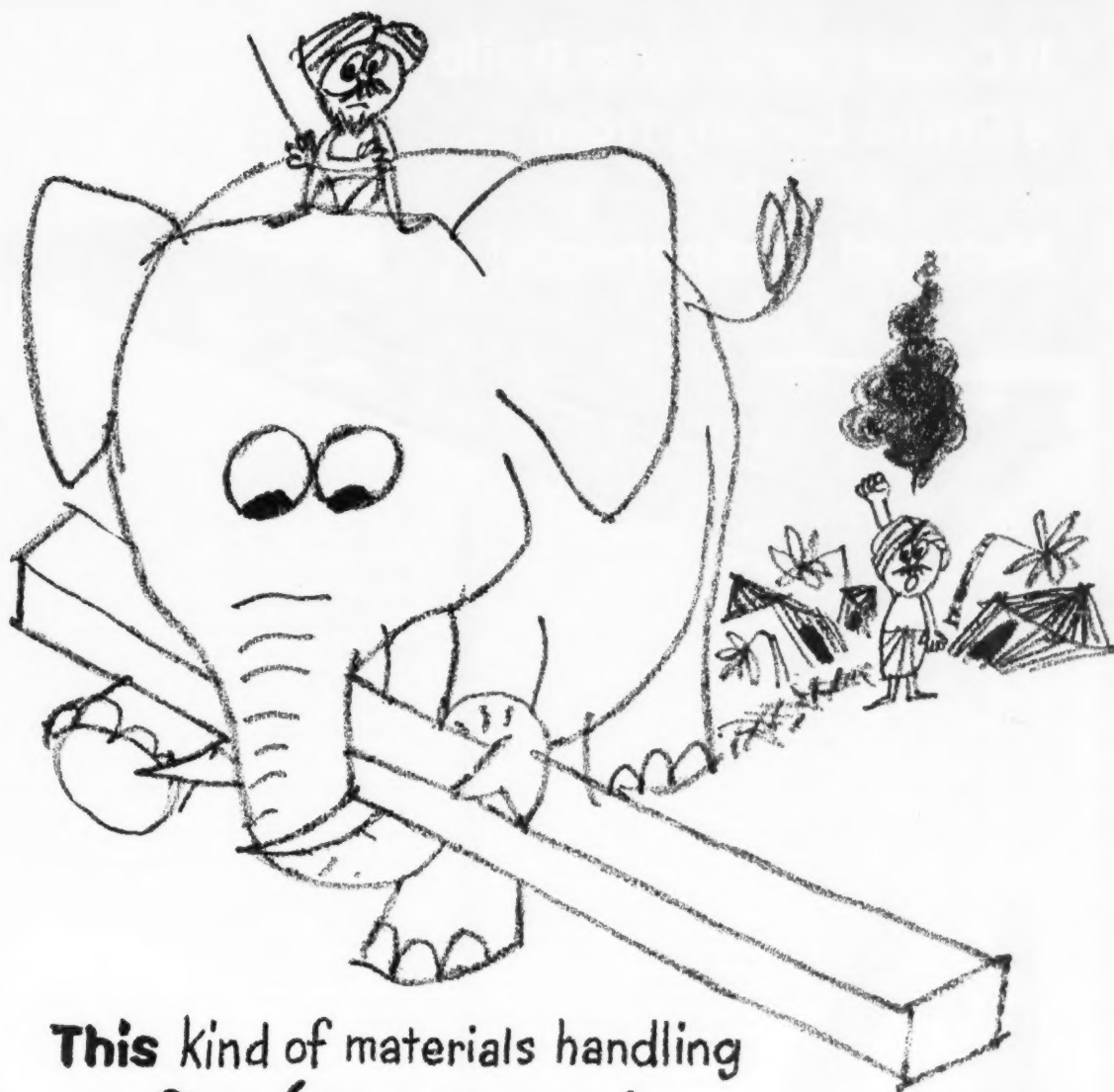


What is Monotrol? It is a revolutionary control system that frees the operator's hands for full-time steering and load control. A single right foot pedal controls forward-reverse and speed. A left foot pedal controls precision inching. Push-buttons control automatic parking brake and transmission engagement for complete safety.

Factories: Portland, Ore. • Danville, Ill. • Peoria, Ill. • Kewanee, Ill. • Nijmegen, The Netherlands • Glasgow, Scotland • Sao Paulo, Brazil • Sydney, Australia (licensee)

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MATERIAL HANDLING ENGINEERING



This kind of materials handling is fine (for Cambodia)

But you're not in Cambodia. You're here, and that's good. Because Roebling is here, too, with the complete line of wire rope slings for every lifting need.

All Roebling Slings (and there are many types in a wide range of sizes and capacities) are precision-made for stability under load ... uniform and consistent strength.

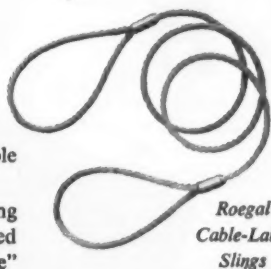
The All-Purpose Sling, for example, embodies the rolled loop and tapered sleeve attachment which, beside developing full catalog strength, makes it safe to handle; no servings, all wire ends are covered by the tapered sleeve. Further, the compact sleeve does away

with bulky spliced sections that reduce usable sling length.

Complete details on the major Roebling Sling types . . . All-Purpose with Tapered Sleeve, Roegal® Cable-Laid and "Flatweave" . . . are given in the Roebling Sling Book. This will be sent to you when you request it. Write to Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

Your Roebling salesman or distributor can be of large help on any matter dealing with slings. Make use of him.

ROEBLING
Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

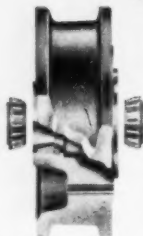


Roegal
Cable-Laid
Slings



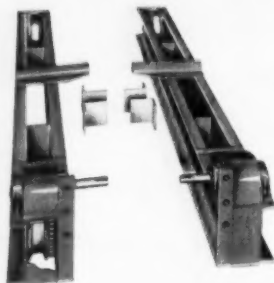
Roebling
"Flatweave"
Slings

It Costs Far Less to Build a Crane Locally from **Wright** Matched Components!



TREAD WHEELS

Made of special car wheel iron with the tread deep chilled to a hardness of 450-500 Brinell. Tapered tread is self-aligning.



END TRUCKS

Welded steel channel construction with heavy steel plate diaphragms. Squaring shaft of ground and polished steel.



CRANE DRIVE UNIT

Consists of electric motor and well-proportioned gear reduction. Solenoid "drag" brake. Size 1—motors up to 2 HP. Size 2—3 or 5 HP motor.

● Now, buy a dependable WRIGHT B-514 Top Running Single Bridge Crane the modern, money-saving way! Here's all you do! Instead of paying shipping costs on a complete crane, order only the matched components—end trucks, crane drive unit, trolley hoist—from the WRIGHT factory. Then, buy heavy I-beam structurals from a local source. This way you realize big savings by greatly reducing freight charges. In addition, WRIGHT also furnishes you with detailed plans for assembly, including a list of essential structural components to be bought locally.

A FEW OF THE WRIGHT B-514 FEATURES:

Controls • Single-speed push button controls are furnished with fluid-drive models, variable-speed push button controls with models without fluid drive. Variable speed controls have five selective speeds for speeding and slowing crane travel.

Fully Integrated Electrical Controls for the B-514 assembled locally with a WRIGHT Hoist and WRIGHT Crane Drive Unit are factory-installed at no extra charge.

Two Timken Roller Bearings to each wheel. Placed in opposition to one another, they compensate for radial and thrust loads.

Complete information about the WRIGHT B-514 Crane and other WRIGHT products is available by writing our York, Pa., office.

WRIGHT CRANES

Wright Hoist Division • American Chain & Cable Company, Inc.

York, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

Circle 9 on Reader Service Card for more information

MATERIAL HANDLING ENGINEERING



Nationwide Network of Local Service Centers!



Wherever they are, users of Towmotor-Gerlinger fork lift trucks and carriers know that the industry's fastest service is as handy as a phone call. It's one of the reasons why industrial firms have invested millions of dollars in Towmotor-Gerlinger equipment.

Over 90% of parts are replaced off the shelf at local service centers—others within 24 hours! Prompt repairs are made by service experts. Even engine overhauls are treated like emergencies to maintain Towmotor's reputation for *Continuous Operation*. This is aided also by Towmotor Preventive Maintenance Service *which actually averts downtime, prevents wear, cuts repair bills and keeps equipment on the job around the calendar!*

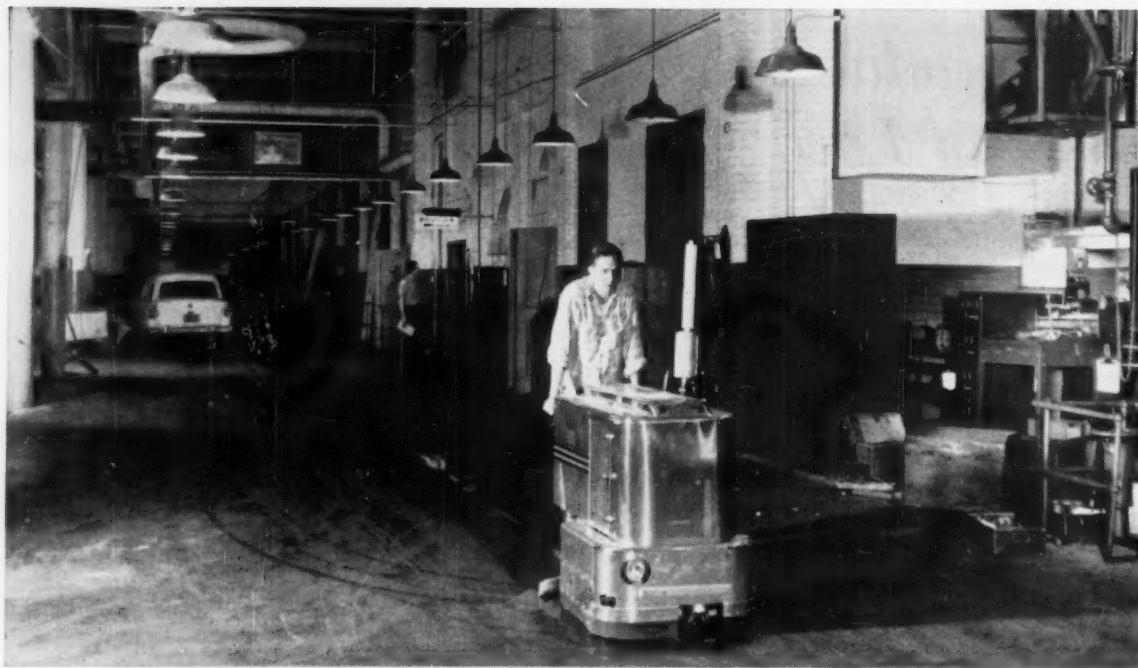
Want more information on this unique Towmotor service? Ask for *Towmotor P-M Service Booklet SP-18*. Write Towmotor Corporation, Cleveland 10, Ohio.



LEADER FOR 40 YEARS IN BUILDING
FORK LIFT TRUCKS, CARRIERS AND TRACTORS

*Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation

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Self-propelled ClarkeAmatic floor maintainer, powered by air-cooled Wisconsin engine, combines scrubber and vacuum pick-up to assure clean, safe and sanitary floors up to 28,200 sq. ft. per hour—twenty times faster than ordinary mopping.

Clarke Floor Machine Company reports

“LESS FUEL, FUMES AND MAINTENANCE” WITH WISCONSIN ENGINES AND ZENITH LPG CARBURETORS

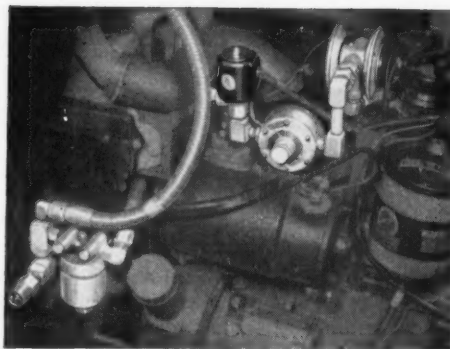
This operator is cleaning a quick path to important economy—with complete safety! The Zenith* LP-Gas Carburetion System is guarded by hydrostatic pressure relief valves and self-sealing couplings. When ignition switch is off or when engine stalls, the Zenith UL Approved vacuum switch assures the cut off of fuel supply.

Zenith carburetors are readily calibrated so that all objectionable exhaust fumes are eliminated. The LP-Gas burns clean with no lead deposits and minimum of carbon deposits. Meanwhile dilution of engine lubricants is maintained at an *absolute minimum*. Benefits include three to four times longer oil life, up to twice the number of hours between major engine overhauls, and phenomenal savings in fuel costs.

Wisconsin Motor Corporation offers Zenith LP-Gas Carburetion Systems as original equipment on all its engines from 3 to 56 H.P. And for their conversion kits Zenith is again the choice of Wisconsin, the leader in the field of heavy duty air-cooled engines.

Original equipment and conversion units are available to manufacturers and owners of all makes of lift trucks, tractors, motor vehicles, and other combustion engine applications. For low cost and complete details, contact your local dealer or address: LP-Gas Service Department, Zenith Carburetor Division, 696 Hart Avenue, Detroit 14, Michigan.

*REG. U.S. PAT. OFF.



Zenith, the oldest and most experienced manufacturer of carburetors for industrial engines, has applied its practical knowledge to LP-Gas systems of outstanding efficiency and economy. If you are considering the advantages of LP-Gas carburetion you are invited to consult with the Zenith specialists.

Zenith Carburetor Division



Circle 28 on Reader Service Card for more information

MATERIAL HANDLING ENGINEERING

What you—as a Battery User—
Should know about

U.S. PATENT 2,871,281

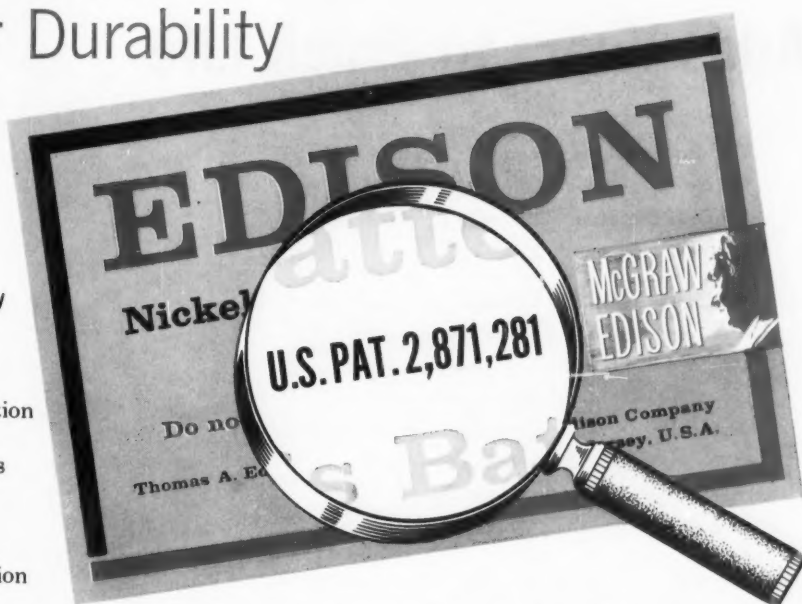
New Active Material Gives EDISON
Even Longer Life
Even Greater Durability

This Label On Your Battery

Means This in Performance

1. Longer life—lower depreciation
2. Reduces maintenance cost
3. Durable—no sudden failures
4. Full shift performance
5. Fully automatic charging
6. No corrosive fumes
7. Lowers cost of truck operation
8. Can stand idle indefinitely
9. Withstands temperature extremes
10. Other uses after heavy duty life
11. Lighter weight
12. Edison Nationwide Service

EDISON — The Higher-Priced
Battery that Costs Less



Now EDISON, the only battery originally developed exclusively for electric trucks, *again leads the field* with a new patented active material that means *longer life and greater durability*. Tested exhaustively in the laboratory . . . proven, *under torturous conditions*, in the field . . . this new development in active material reduces your annual battery cost to an even lower level and protects the battery against damage caused by excessive overcharging and overdischarging.

EDISON's free book about this remarkable development is a "must" for battery users. Write Storage Battery Division, Thomas A. Edison Industries, West Orange, N. J.

EDISON NICKEL-ALKALINE **STORAGE BATTERIES**

Another Product of



Exclusive

L-S[®]

LUBRICATED-FOR—

Cuts Maintenance Costs— Adds Years to Truck Life

The constant strain of capacity loads, plus the hazard of routine dust, dirt and moisture, make bearings one of an industrial truck's most critical components.

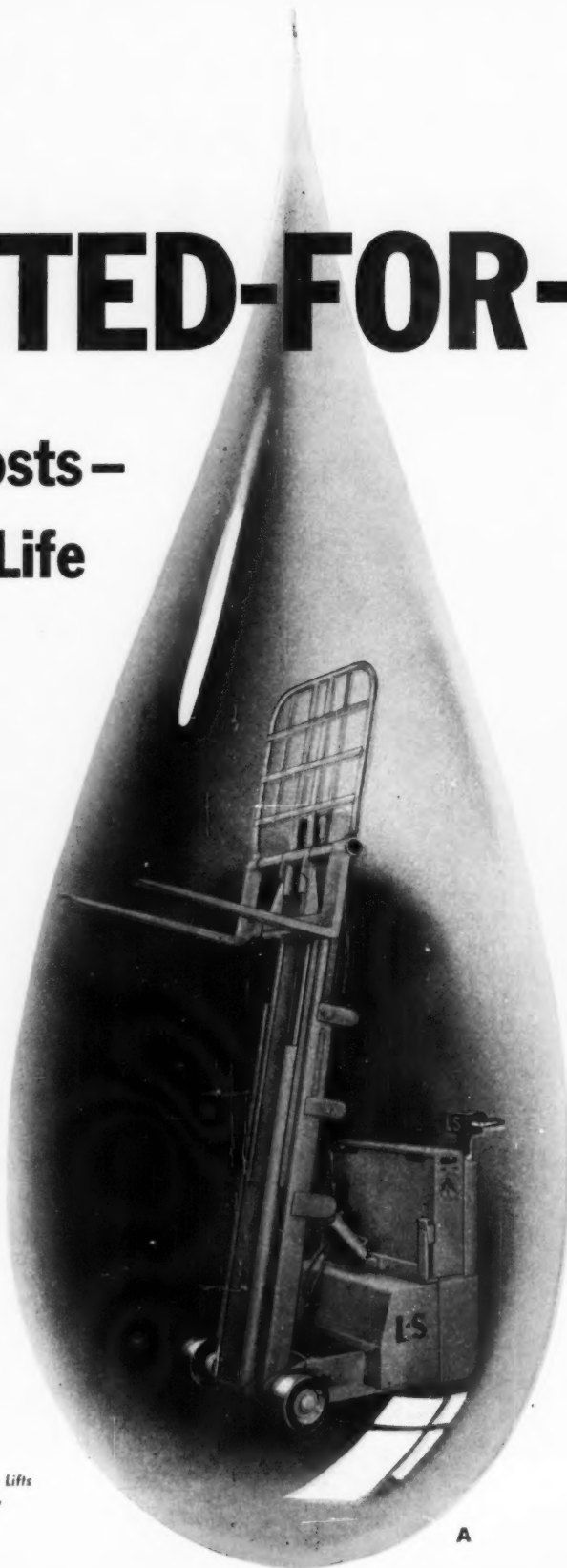
That's why Lewis-Shepard engineers have given such careful attention to the selection, function and lubrication of L-S bearings. Every bearing is *pre-adjusted, pre-lubricated and permanently sealed*. This sealed-in lubrication *lasts for the life of the truck*. Except for certain operating conditions requiring fittings for grease flushing . . . *all periodic lubrication is eliminated!*

This exclusive lubricated-for-life design gives you the additional advantages of no slippery, oil-stained floors . . . no down-time due to insufficient or improper lubrication. And, since L-S bearings are pre-adjusted, there's no danger of improper take-up.

Pre-lubrication is just one of the many lifetime economies you get with Lewis-Shepard equipment. Maintenance savings alone can add up to \$260 per truck per year. The next time you buy a fork truck, specify Lewis-Shepard.

Equipment illustrated from left to right:

- A Counterbalanced JackStackers . . . General Purpose "Walkie" Fork Lifts
- B Jacklift Electrics Narrow Aisle Pallet or Platform Low Lift "Walkies"
- C Heavy Duty Model C SPACEMASTER[®] SitDrive Trucks

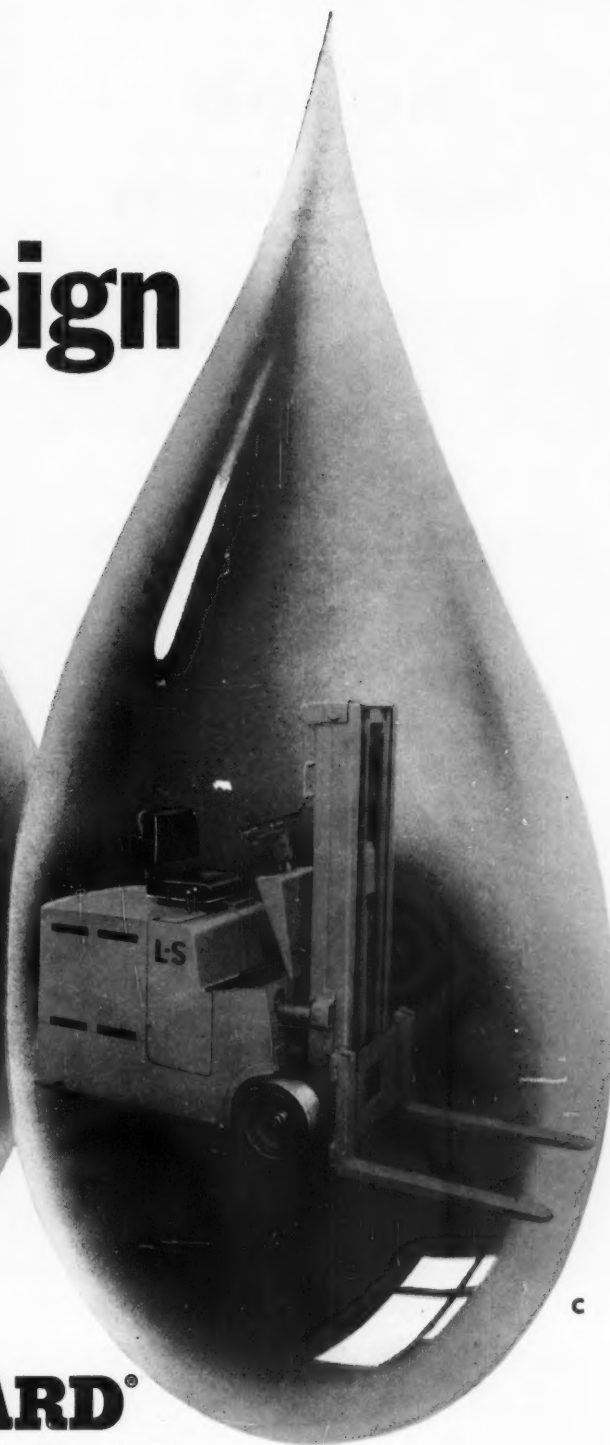


A

-LIFE Design



B



C

LEWIS-SHEPARD®

The MASTER® Line—The COMPLETE Line of Materials Handling Equipment

LEWIS-SHEPARD PRODUCTS, INC., 139 Walnut Street, Watertown, Mass.

☐ Please send me information on Lewis-Shepard Truck: a. ☐ b. ☐ c. ☐

☐ Please send me your L-S MASTER® LINE Catalog ☐ Please have an L-S Representative call

Name.....Title.....

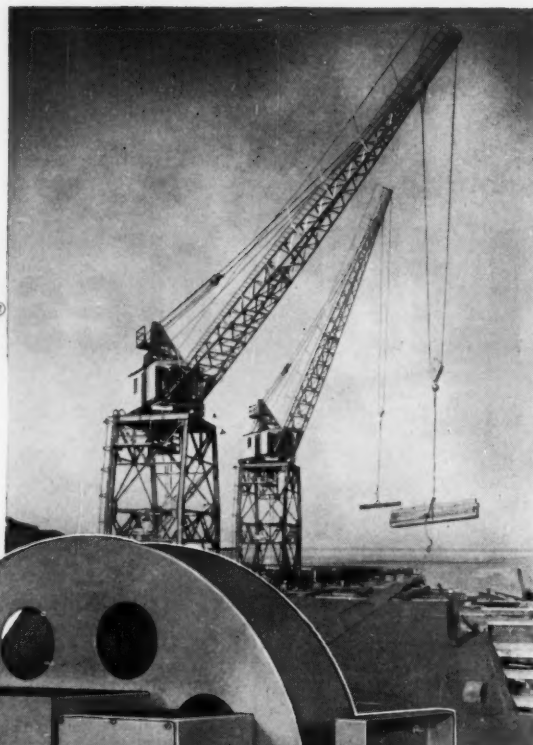
Company.....Address.....

City.....Zone.....State.....

Circle 113 on Reader Service Card for more information

SEPTEMBER, 1959

**no job
too tough
for
APPLETON®
motor driven
REELITES®**



When it's a problem of furnishing power or combination power and control beyond the handling capacity of spring-driven reels, APPLETON can be counted on to find the answer with a motor-driven REELITE.

APPLETON'S experience and engineering skill in designing motor-driven REELITES for gantry cranes, material handling equipment, traveling bridges, magnet application, etc. is known the world over.

If you have a problem of furnishing power or combination power and control for your operation, contact your local APPLETON Field Engineering Office or write for Bulletin 505.
Only APPLETON Makes Reelites



**APPLETON
Electric Company**

1701 Wellington Avenue
Chicago 1, Illinois

Also Manufacturers of:



Explosion-Proof Hand Lamp



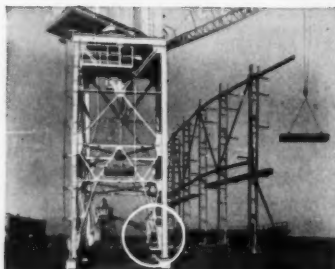
"EX" Series Flexible Couplings



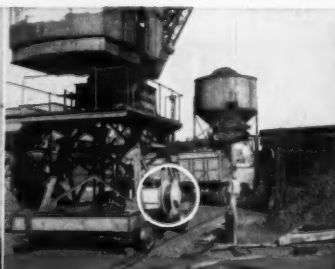
Malleable Iron Unilits



Explosion-Proof Junction Unilits



Motor-Driven Reelite furnishing a source of power for a large gantry crane.



Motor-Driven Reelite installed on movable crane in large coal yard.



Typical installation of Motor-Driven Reelite applied to over-bridge travel application.

Circle 22 on Reader Service Card for more information

MATERIAL HANDLING ENGINEERING

Circle 50 on Reader Service Card ➔



Enlargements of this illustration, suitable for framing, are available upon request.

Cutting the cost...of a "mountain" of steel desks!

Two attachments were recommended by the Clark Engineers consulting with this company: 1) A Slidr-Arm Clamp to eliminate the need for pallets, 2) A Triple Stage Upright for extra high stacking without sacrificing the lift truck's ability to work in low-overhead rail cars.

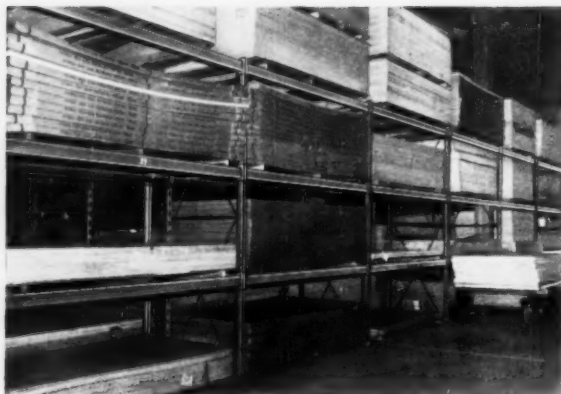
The end result was a big boost in storage capacity, *one-truck* handling from warehouse storage to loading-out . . . a need for fewer trucks.

Your nearby Clark dealer, a materials handling specialist in his own right, has access to the same team of factory specialists that developed a "first" in this Company's industry. You'll find him anxious to offer you similar assistance. Call him direct, or write: Materials Handling Specialists, Clark Equipment Co., Battle Creek, Michigan.

CLARK[®]
EQUIPMENT

American **Slide-n-Lock** **adjustable** **STORAGE RACKS**

have what it takes to cut labor costs and give you more storage space for your dollar...



because

AMERICAN Stringers are one-piece... made of durable, continuous welded steel tubing, made from high carbon steel.

AMERICAN Stringers have step construction for fast, simple conversion to decking... step is $1\frac{1}{4}$ " deep... thickness of finished 2" lumber.

AMERICAN Posts are rugged... made from extra heavy gage steel... roll formed by special tooling.

AMERICAN has positive double-wedging lock... safe-t-pin gives positive security against unhooking stringers.

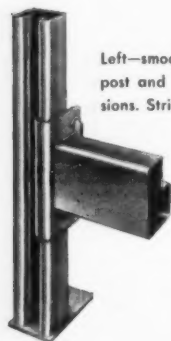
AMERICAN has smooth, aisle-side construction... no protrusions of any kind to tear clothes or create a safety hazard.

AMERICAN has higher safety factors—2.25 to 1—for greater protection to truck operators and merchandise.

AMERICAN Racks are easy to erect... no costly bolting... all parts hook into place.

AMERICAN Racks are easy to adjust... all stringers can be moved independently of any other part.

AMERICAN Upright Frames are cross braced against sway... turnbuckles provide ready take-up for uneven floors.



Left—smooth line construction of aisle side of post and stringer eliminates hazardous protrusions. Stringers raise and lower like a window.



Right—note rigid connection when stringer is "locked" to post.

NO BOLTS



NO WELDING



send for catalog

AMERICAN METAL PRODUCTS COMPANY
STORAGE RACK DIVISION

5961 Linsdale Ave. **amp**® Detroit 4, Michigan

Circle 16 on Reader Service Card for more information

MATERIAL HANDLING ENGINEERING

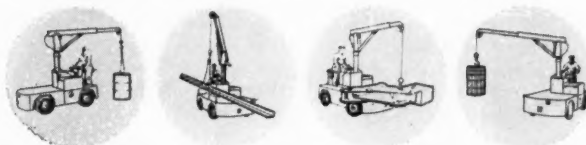
there are 101 ways
to cut handling
costs with the new

DROTT "GO-DEVIL"



If you're looking for cost-cutting ideas in materials handling, put your imagination to work on the possibilities offered by the new Drott "Go-Devil". You name it — it does it.

Here are just a few of
the 101 time-saving applications
for the "Go-Devil".



SPECIFICATIONS

MODEL	CAPACITY	FULL EXTENSION	BOOM	
			LIFT	ROTATION
20 RM2	2000 LBS.	8' 6"	HORIZ. TO 75°	360° CONTINUOUS
50 RM2	5000 LBS.	18' 0"	HORIZ. TO 75°	360° CONTINUOUS

Sold through Materials Handling Equipment Dealers — some territories available.

DROTT
MANUFACTURING CORP.

Materials Handling Division
3126 South 27th Street
Milwaukee 15, Wisconsin

Circle 69 on Reader Service Card for more information

SEPTEMBER, 1959

IT LIFTS — Hydraulically controlled boom raises or lowers with fingertip control, from horizontal to 75°. Cable can be controlled simultaneously.

IT REACHES — Boom hydraulically extends and retracts — extension control can be simultaneous with other actions of the boom.

IT HAULS — Large, sturdy platform makes it a hard-working mobile truck. Stakes and side platform area permit hauling pipe and other long objects.

IT SWINGS — Full, continuous rotating boom swings at safe maximum speed of 3 R.P.M.

IT MANEUVERS — Touch control of forward and reverse provide complete maneuverability for cramped quarters, plenty of speed for yard areas.



"It has excellent load balance plus a faster loading and delivery cycle,

... and it's handling materials that our other loader couldn't", says Walter Freude, General Foreman at General Smelting Co., Philadelphia, in praise of the model H-25 "PAYLOADER".

General produces aluminum alloys, zinc spelter and zinc alloys and uses the H-25 for many tasks—to unload rail cars of various materials and to handle zinc ash, scrap, dross, etc. Unloading the zinc dross from rail cars as pictured, the H-25 moves 35,000 lbs. per hour, working a 180-yard round trip cycle.

Scooping up and carrying these heavy materials is a tough job. The 2,500 lb. carry capacity, 4,500 lb. bucket breakout force, "no-spin" differential, short (6 ft.) turning radius and other features of the model H-25 all contribute to the high tonnage being moved and the steady, dependable service being rendered by this outstanding tractor-shovel.

Industries of all kinds have depended on "PAYLOADER" tractor-shovels for many years for a host of bulk-material moving jobs. Nine models are available, up to 12,000 lb. carry capacity, and a nearby Hough Distributor is ready to fit one to your need.



PAYLOADER®...



THE FRANK G. HOUGH CO.

731 Sunnyside Ave., Libertyville, Ill.

- ☐ Send Model H-25 "PAYLOADER" data
☐ Data on all "PAYLOADER" models and attachments

NAME _____

TITLE _____

COMPANY _____

STREET _____

CITY _____

STATE _____

9-A-3

"You can't beat the POWER-SHIFT

it's faster and easier to get around among the piles. It's easy to keep ahead of the crusher. The bucket control is great, too—makes clean hopper loading simple", reports Operator Jess Rodriguez at Standard Fire Brick Co., Pueblo.

His job is to feed a jaw crusher with four kinds of material—raw silica rock, cull brick and two grades of clay—from stockpiles on an open platform. Standard Fire Brick Co. has been a "PAYLOADER" user for many years and has a second, larger, 4-wheel-drive unit at this plant that handles heavier loading and mixing work.

HOUGH®



THE FRANK G. HOUGH CO.

LIBERTYVILLE, ILLINOIS

SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER and PAY are registered trademark names of The Frank G. Hough Co., Libertyville, Ill.



.. design boosts production



**"I'll never be without
POWER-STEERING again"**

So says Roy Forman, operator of this H-25 for Lee County Service Company—fertilizer manufacturer of Amboy, Ill. "There's no exertion and lots more maneuverability."

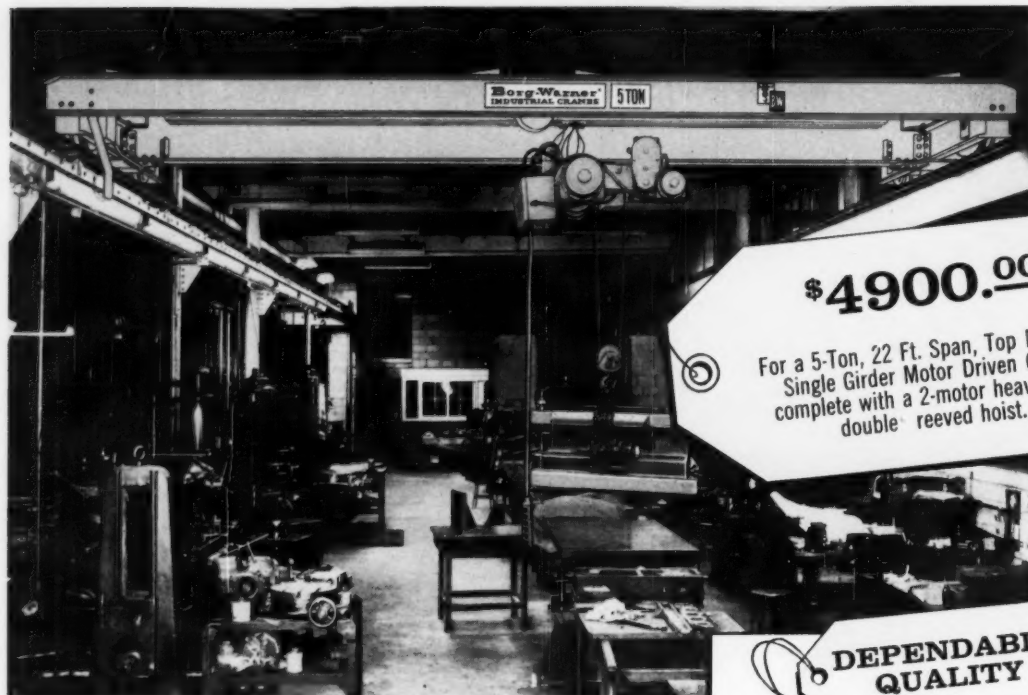
This company uses the H-25 three ways—to load from bins into hopper for blending, to load trucks directly from bins and to unload box cars to bins.

Several quick-mounted attachments are available for "PAYLOADER" units to extend their usefulness—pick-up sweeper, hydraulic grapple fork, lift forks and others.

Circle 98 on Reader Service Card for more information

PRODUCTION WISE and COST CONSCIOUS!

**Borg-Warner quality assures you of top value
in every capacity, performance and price range**



\$4900.00

For a 5-Ton, 22 Ft. Span, Top Running
Single Girder Motor Driven Crane
complete with a 2-motor heavy duty
double reeved hoist.

DEPENDABLE QUALITY

- Full 5-ton rating with ample reserve capacity.
- Heavy duty Borg-Warner Motor Reducer Bridge Drive with integral fluid coupling.
- Heavy duty double reeved close headroom hoist.
- Heavy duty forged steel wheels.
- All welded, jig assembled, jig bored end trucks.
- Long life precision ball and roller bearings.
- Precision assembly of girder and end trucks with fitted bolts in reamed holes.
- Outrigger machinery girder construction.
- Full magnetic push button control.

ADVANCED DESIGN

The N-TRMD illustrated is a typical Borg-Warner Industrial Cranes Top Running Single Girder Motor Driven Crane. The precise equipment to meet your specific needs is available. Consult with Borg-Warner Industrial Cranes engineers.

PRODUCTION WISE

There's no room in this busy shop area for aisle-filling floor-type handling equipment. But, an economical Borg-Warner 5-Ton Crane System transports materials and work swiftly, smoothly and quietly with minimum interference to production.

COST CONSCIOUS

Borg-Warner engineers and production men have made extensive use of interchangeable, standardized components resulting in real savings for you. You get more crane, more performance and greater dependability, for a smaller investment.

If you are planning on expansion or modernization, it will pay you to find out how Borg-Warner Industrial Cranes can supply you with the best values in overhead materials handling equipment.

*Design it better ...
Make it better.*

Find Your Nearest
Distributor Under
CRANES in The
Yellow Pages

Distributors in all
principal industrial cities.



Borg-Warner® INDUSTRIAL CRANES

1530 S. PAULINA STREET, CHICAGO 8, ILLINOIS

Export Sales: Borg-Warner International, 36 South Wabash Ave., Chicago 3, Illinois

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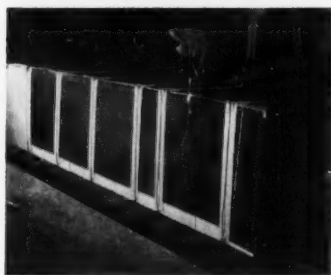
MATERIAL HANDLING ENGINEERING



COST CUTTING IDEAS

\$ Time Cut In Bracing Work

U.S. Gypsum Co. ships gypsum board, lath and sheathing on flat cars with permanent end bulk-

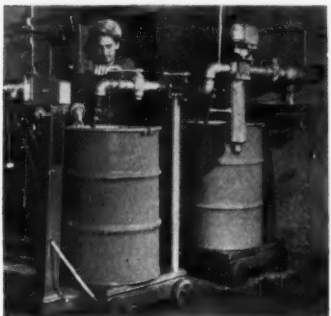


heads. These products arrive in first-rate condition. Heavy duty Acme Steel strapping is used to brace the loads against side shift during transit. The method has resulted in substantial reduction of the time required to brace a car after stowage of the loading is completed. An electric stretcher gives uniform tensioning.

Circle 401 on Reader Service Card

\$ Self-Cleaning Filters Protect Oil Products

A battery of self-cleaning filters assure cleanliness of grease and blended lubricating oils as they



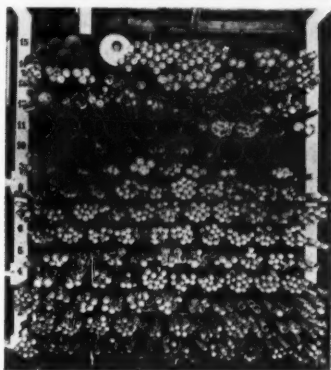
flow from originating kettles to discharge nozzles at the Grease Section of the Brooklyn Refinery of Socony Mobil Oil Co., Inc. The filters, with stainless steel metal-edge elements are installed in the lines of each of 18 filling stations. The purolator filters replace

presses that had several stationary screens which had to be removed and washed by hand. They had to be changed manually for use with different grease and oils. Time is saved in changing filters now, as the new filters are cleaned simply by rotating the cylinder filter media against a stationary blade. Filtered particles drop down to the bottom of the filter case where they are quickly removed.

Circle 402 on Reader Service Card

\$ Fibre Storage Tubes Ease Inventory Work

Fibre storage tubes used for aluminum extruded mouldings



and trim have cut former required storage space to one-third at the Edward S. Hart Co. Designed by the Systems Council, the tubes have eliminated damaged and bent material and have reduced time required to locate, store, or inventory material. Numbers at the side of the tubes simplify location. Every item is immediately accessible for removal or inspection, and every tube is readily available for storage use. For inventory purposes, a tag is placed at the outside end of each tube giving full details of type of material, length, grade, re-order quantity. An index card in the office showing each location and duplicate data from the tag, completes the inventory control.

Circle 403 on Reader Service Card

HARTMAN SYSTEMS PAY OFF!

FLEXIRACK

COMPLETE ADJUSTABILITY
solves storage problems.



POWER DOCK

Unique 30" in and out motion
plus 24" up and down... to
serve any type truck quickly
and safely.



BOOSTER

with Power Drive
gives big truck value
at portable lift
cost. Capacity to
2000 lbs.



WRITE
TODAY
FOR
DETAILS

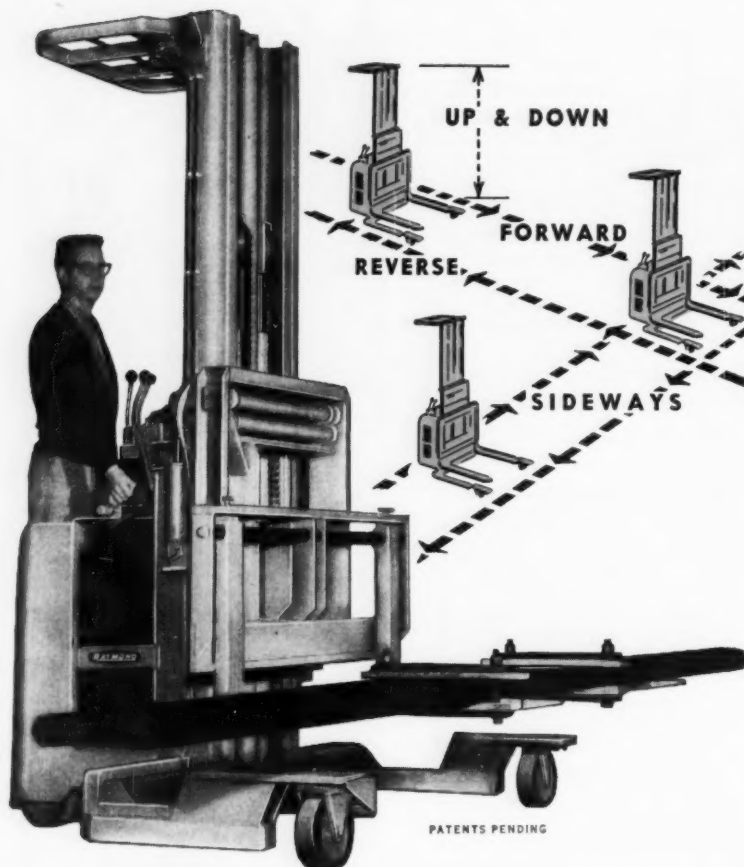
Hartman METAL FABRICATORS
131 Murray Street, Rochester 6, N. Y.

Please send literature on:
☐ FLEXIRACK ☐ POWER DOCK ☐ BOOSTER

Name.....
Firm.....
Street.....
City..... State.....

Circle 95 on Reader Service Card

4-D **RAYMOND** ELECTRIC TRUCK



move LONG material in NARROW aisles

Bar stock, rods, sheet steel, pipe, tubing, assemblies, carpeting, or any long material is easily handled by the Raymond 4-D Electric Truck . . . up or down . . . forwards . . . backwards . . . or sideways down a narrow aisle. You have to see it to believe it.

**MAIL
COUPON
TODAY**

The RAYMOND CORPORATION

3350 Madison St., Greene, N.Y.

Please send Bulletin describing your amazing 4-D Electric Truck

NAME _____	TITLE _____
COMPANY _____	
STREET _____	
CITY _____	STATE _____

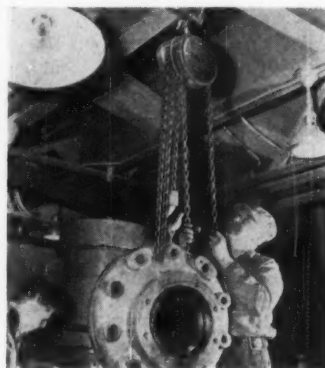
Circle 148 on Reader Service Card for more information

COST CUTTING IDEAS

(Continued)

\$ Hoists Reduce Manual Maintenance Effort

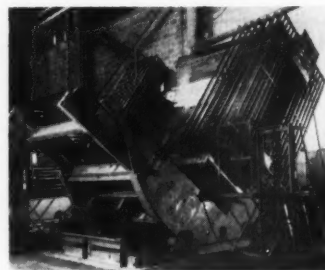
Maintenance tasks at the Burlington, N. J. Generating Station of Public Service Electric and Gas Co. are eased by a number



of lightweight portable Yale Load King hand hoists. They perform the bulk of the manual effort in a wide variety of jobs. Easily moved from job-to-job, they permit one man to do what formerly required two for the lifting and pulling of heavy equipment parts.

\$ Positioner Releases Crane For Other Use

Huge transformer tanks, weighing up to 12,000 pounds, are flipped about with ease by the giant tank welding positioner de-



vised by General Electric's Medium Transformer department. Expensive delays have been eliminated, and weld quality has been greatly improved. The positioner is an L-shaped frame with a turntable on the short leg which traverses in and out. The frame, powered by a three-horsepower motor, rotates through a 90-degree arc to

lay tanks on their sides. The positioner releases 75% of overhead cranes for use elsewhere in the plant. Instruction in vertical and overhead welds has been minimized. A complete welding job before tanks are removed from the positioners is assured.

Circle 405 on Reader Service Card

\$ Magnetic Conveying Saves Floor Space

Glazed and slippery bun pans at the Jewel Tea Co. Bakery now ride smoothly up an incline to an automatic bun depanner. The



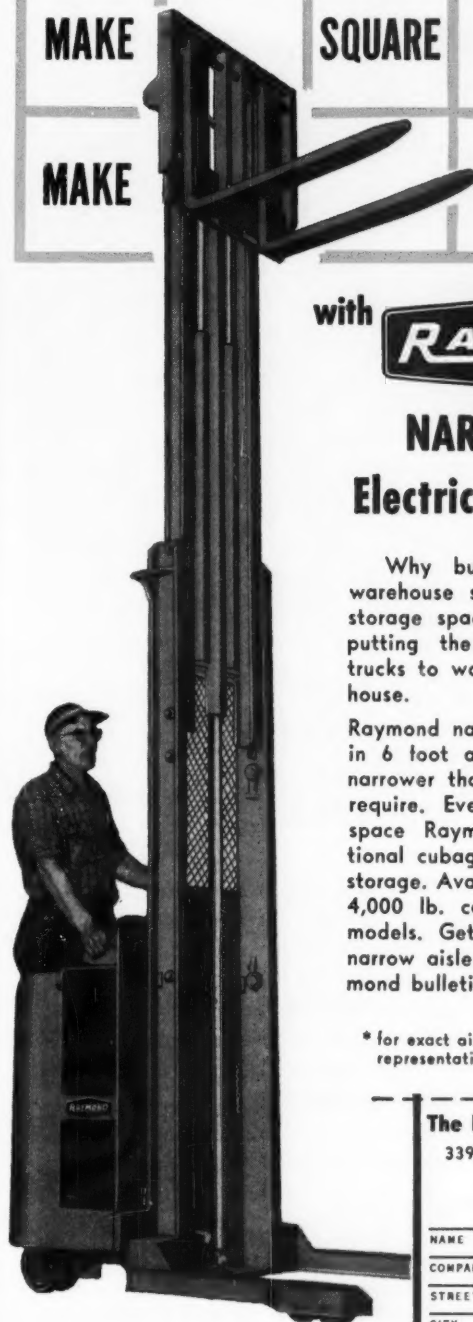
process is easily controlled with non-electric magnetic Magna-Rails installed under the conveyor belt. Empty or full cans and pans are automatically conveyed up or down angles as steep as 90 degrees. Much floor space formerly lost to near-level conveyors is saved. Conveyor lines are shortened, and production speed is increased. The Eriez Mfg. Co. makes them in various strengths and in wide ranges of lengths and shapes. They are used in a variety of operations in bakeries as well as in other food processing plants.

Circle 406 on Reader Service Card

\$ Coil Handler Saves 20% Loading Time

Greater stability in handling large coils of tin plate, and better positioning of coils when loading trucks are reported by the Kaiser Steel Corp.'s Fontana Plant. With its Automatic Transportation Co.'s Elbolift, the company reports a 20% savings

MAKE	EVERY	SQUARE	FOOT	COUNT
MAKE	EVERY	SQUARE	FOOT	COUNT
MAKE		SQUARE	FOOT	COUNT
MAKE			FOOT	COUNT



with



NARROW AISLE Electric Tiering Trucks

Why build or lease additional warehouse space? Make use of the storage space you are **not** using by putting the Raymond narrow aisle trucks to work in your present warehouse.

Raymond narrow aisle trucks operate in 6 foot aisles* . . . 4 to 6 feet narrower than counterbalanced trucks require. Every square foot of floor space Raymond saves means additional cubage . . . up to 50% more storage. Available in 2,000, 3,000 and 4,000 lb. capacities. 12 or 24 volt models. Get the complete Raymond narrow aisle facts . . . send for Raymond bulletin today.

* for exact aisle width, ask your Raymond representative to survey your operation.

The RAYMOND Corporation

3392 Madison St., Greene, N.Y.

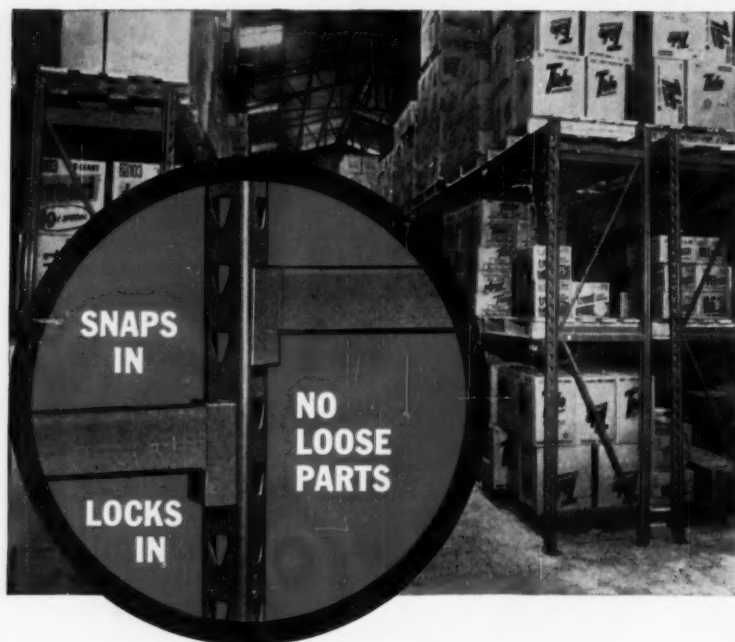
Please send Electric
Tiering Truck bulletin

NAME TITLE
COMPANY
STREET
CITY STATE

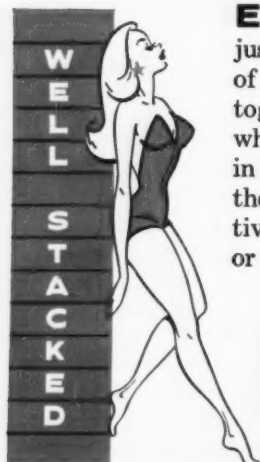
Circle 149 on Reader Service Card for more information

Fast!

EMI *air-row head* Fully Adjustable Pallet **RACKS**



- EASY TO ERECT
- ONLY 2 BASIC PARTS
- SIMPLE TO ADJUST
- QUICK TO RELOCATE



EMI AIR-ROW Head Racks easily adjust to stack pallets, skids, dies and bulk of varying heights. Upright frames are tied together with sturdy steel support beams which quickly snap into AIR-ROW slots in the vertical post. Forge lock fittings on the ends of the support beams insure positive self-locking engagement with no sway or pop-out.

WRITE FOR OUR COMPLETE CATALOG!

EQUIPMENT MFG. INC.

21552 HOOVER ROAD • DETROIT 5, MICHIGAN

Circle 75 on Reader Service Card for more information

COST CUTTING IDEAS

(Continued)



in truck loading time. Drivers are pleased with the maneuverability of the elbow lift truck. Design permits it to get close to a street truck. The drive wheels can go partially under a street truck when positioning a load. This feature lets it position a coil in one operation. The coils of tin plate it moves at this plant weigh up to 20,000 pounds. It stacks them 3-high.

Circle 407 on Reader Service Card

\$ Method Simplifies Battery Charging

A rail mounted electrical connector simplifies charging of batteries for electric industrial trucks at the York, Pa. plant of the Cat-



pillar Tractor Co. It is easy to connect the lead from the battery. Cables are led from the charger through a sub-floor conduit, then along underside of bottom rail of battery rack, through hole in rail to connector. The connector is screwed to a flange which is welded to the outside of the rail. This arrangement protects the cable, helps maintain shop neatness, and prevents accidents through tripping. System was devised by Exide Industrial Division of the Electric Storage Battery Co., and Caterpillar.

Circle 408 on Reader Service Card

MATERIAL HANDLING ENGINEERING

Circle 94 on Reader Service Card➤

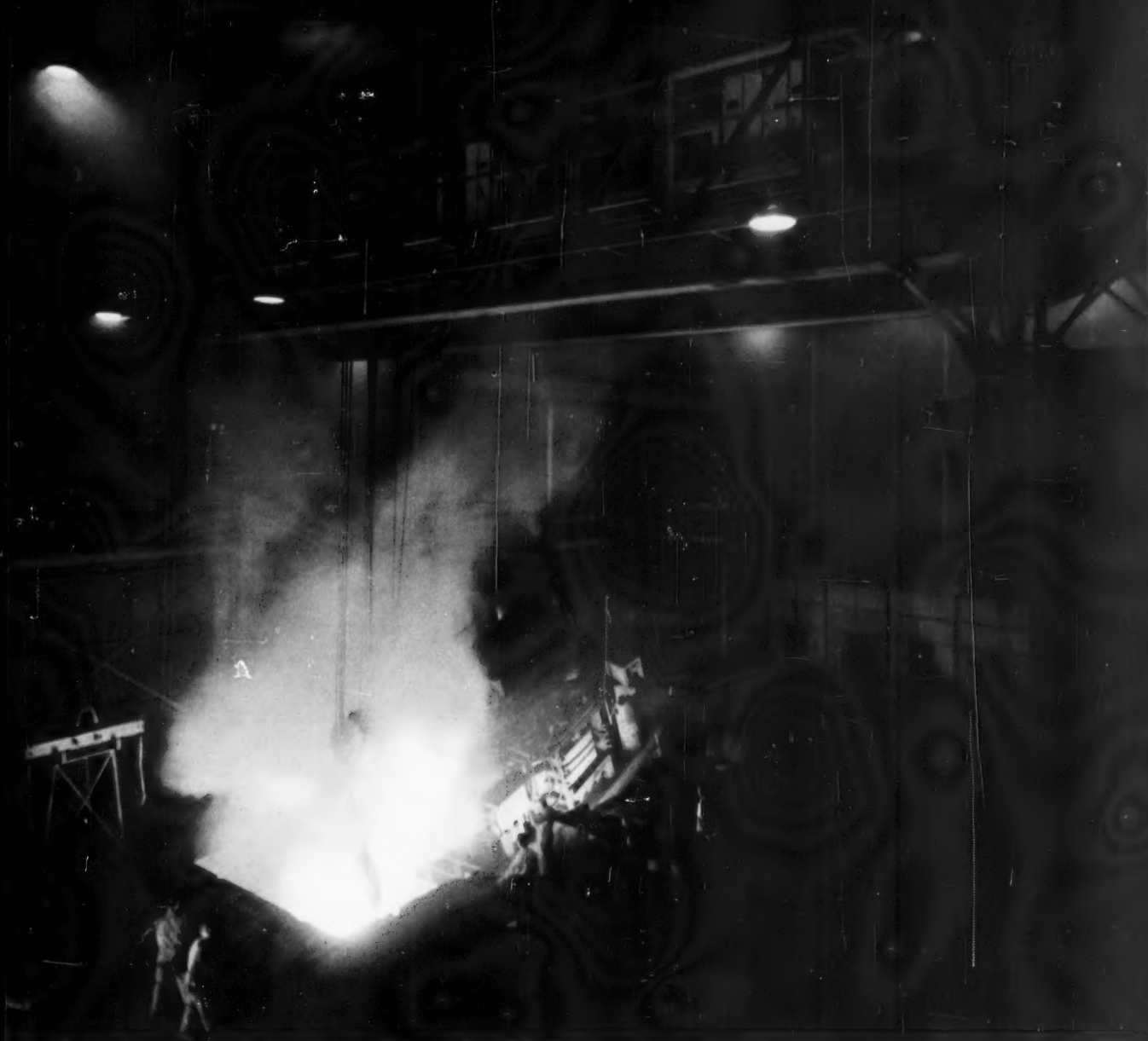


Photo Courtesy Eastern Stainless Steel Corp., Baltimore, Md.

FOR EVERY APPLICATION, THERE'S ONE CRANE OUTSTANDING...

IN STEEL MILLS: This rugged 100-ton giant proves that P&H builds a true steel-mill crane which is *specifically designed* for steel mill use.

P&H steel-mill cranes are bigger and heavier. Their design combines brute strength and special metallurgy for lasting vertical and lateral stability. Each unit is engineered to easily handle constant massive loads—to shrug off strains and stresses of frequent shock loads—and to resist the terrific blasts of heat without effect on crane parts and structural supports. No disrupting your production when you use P&H!

Equally important to you—P&H is the *only* crane manufacturer that makes the *entire* crane...including all structural, mechanical, and electrical parts...and then gives you guaranteed one source responsibility. *Remember that...* the next time you buy a crane on which your mill production will depend! For more information, write for Bulletin C-42, Dept. 107, Harnischfeger Corp., Milwaukee 46, Wisconsin.

P&H

HARNISCHFEGER

...quality and service for 75 years

OUR 75TH YEAR

TOMORROW'S NEWS GETS A "LIFT" FROM P&H

The newspaper must go out on time! And to start heavy rolls of newsprint into production, this major metropolitan daily relies on the finest hoists in the world to keep things moving . . . new Balanced-Design P&H Hevi-Lifts.

Balanced Design means that each part of the new P&H Hevi-Lift hoist has been balanced or matched with every other part for maximum strength, temperature, and performance characteristics. *There are no weak parts!*

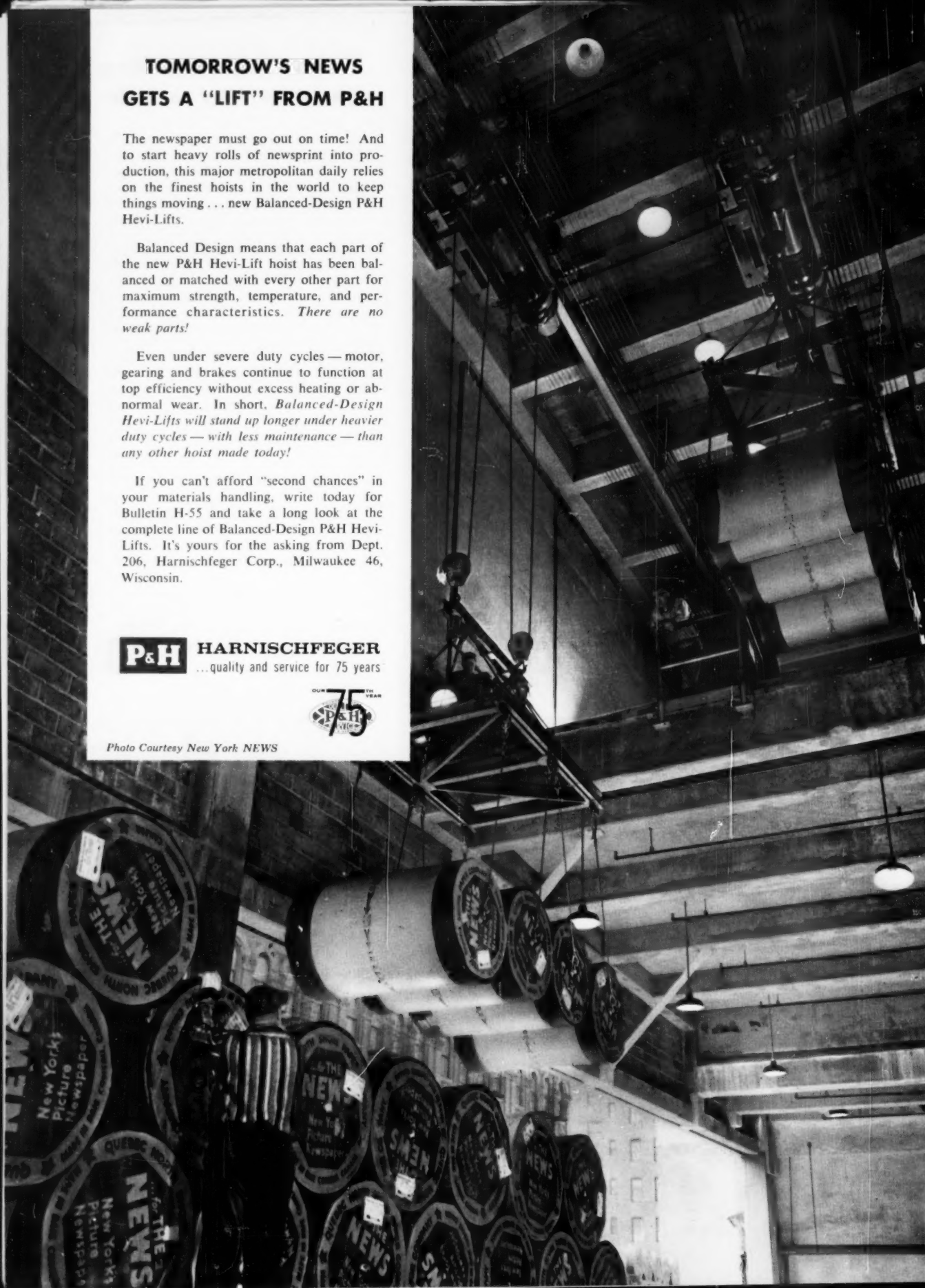
Even under severe duty cycles — motor, gearing and brakes continue to function at top efficiency without excess heating or abnormal wear. In short, *Balanced-Design Hevi-Lifts will stand up longer under heavier duty cycles — with less maintenance — than any other hoist made today!*

If you can't afford "second chances" in your materials handling, write today for Bulletin H-55 and take a long look at the complete line of Balanced-Design P&H Hevi-Lifts. It's yours for the asking from Dept. 206, Harnischfeger Corp., Milwaukee 46, Wisconsin.

P&H HARNISCHFEGER
...quality and service for 75 years



Photo Courtesy New York NEWS





Dead Plant Space Comes to Life with Rapistan® Live Storage

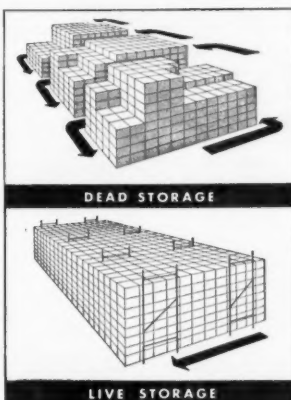
It costs less to solve your storage and order selection problems than it does to go on living with them. Rapistan "live storage" FLOW RACK™ is that solution.

This new technique of storage is simple and efficient. Materials are inserted into the loading side of the Flow Rack, and move through to the selection side by gravity. As an item is removed from the rack, the one behind it flows forward to take its place.

Live Storage Ends Waste

Before Flow Rack proved its potential, "high stacking" of materials was the usual warehousing practice. This is "dead" storage — and it's deadly to efficiency. Order selectors spend up to half their time walking and searching. Extra-wide aisles eat up needed storage space. Air space is only partially used, and multiple handling is common.

With live storage in Rapistan Flow Rack, warehouse men work in short, straight lines for loading and order selection. Non-productive walking time is drastically cut. Wasted aisle and air space is fully utilized.



Improves Management Controls

Efficiency and space savings are only part of the story. Management gains important advantages in better inventory control, better housekeeping, tighter supervision.

Flow Rack provides automatic first-in-first-out stock rotation, since what goes into the rack first must come out first. Inventory control is orderly, with all items stored in individual rack openings for fast, accurate checking. Elimination of congested aisles and misplaced materials results in greater employee safety, less material damage, improved housekeeping.



THIS IS "LIVE STORAGE" at peak efficiency. Incoming parts are moved into a Flow Rack directly from the receiving dock. Flow Rack utilizes "cube" space to ceiling height, safely.

New, more Durable Trolley Cuts Overhead Conveyor Maintenance

Rapistan® — KEY-STONE'S new 2-inch pitch overhead conveyor trolleys are really rugged — the closest thing to indestructible in their weight class. Greater capacity, too — 135 lbs. per trolley. The wheels are screw machine products with hardened raceways, twelve $\frac{5}{16}$ " hardened steel ball bearings, replaceable grease fittings with ball check device for positive lubrication. Trolley brackets, center link and "H" attachment are rugged steel forgings. Demand this extra quality in your next overhead conveyor system.



Circle No. 10 on the Reader Service Card for this new bulletin illustrating cost-cutting applications of Rapistan-Keystone overhead conveyor.



NEW LIVE STORAGE IDEAS

This new illustrated idea manual shows how to store more on less floor. It's full of practical ideas on more efficient storage, work positioning, parts selection, inventory control. Circle No. 11 on the Reader Service Card for your copy.

Rapistan materials handling ideas

The RAPIDS-STANDARD CO., INC.
553 Rapistan Building, Grand Rapids 2, Michigan

News from behind the scenes about Boeing's new B-52G

Allis-Chalmers lift trucks on the ground speed missile-platform bombers aloft



The new eight-jet B-52G's can span oceans at more than 650 mph... serve as aerial bases for launching supersonic missiles hundreds of miles from major target areas... and return to American bases without refueling. But behind the flight scenes, there's a story of industrial efficiency almost as dramatic as the bomber itself. At Boeing, precision is essential—in material handling as in everything else. Hundreds

of thousands of different items come into the 603-acre Wichita plant... and move smooth as silk until they emerge on the flight line as a sleek B-52G. We're proud to have a fleet of Allis-Chalmers lift trucks on this Boeing "ground team"... providing efficient, mobile power that helps Boeing deliver its famous aircraft to the U.S. Air Force on schedule, at lowest possible cost. Allis-Chalmers, Milwaukee 1, Wisconsin.

BH-113

ALLIS-CHALMERS



Allis-Chalmers International • Atomic Energy Division • Construction Machinery Division
Engine-Material Handling Division • Farm Equipment Division • General Products Division
Hydraulic Division • Industrial Equipment Division • Power Equipment Division

Circle 5 on Reader Service Card for more information

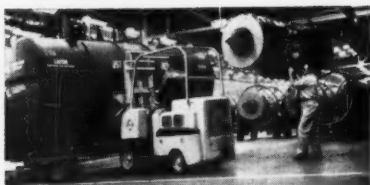
POWER FOR A GROWING WORLD

MATERIAL HANDLING ENGINEERING



Lift Trucks

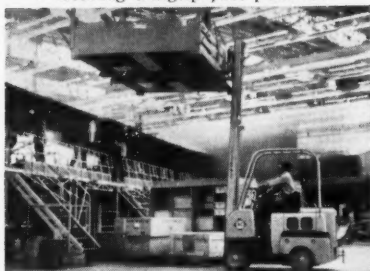
...serve throughout big Boeing plant



Moving 2½-ton jet engines...



Storing wingtip fuel pods...



Handling wing components...



Shuttling test instruments...

In every section of Boeing's modern Wichita plant, Allis-Chalmers lift trucks help to provide an outstanding example of well-planned and coordinated material handling. They're easy to operate, highly maneuverable and safe... also offer superior inching control and smooth directional change with Power-Shift torque converter drive. For full information, write Allis-Chalmers, Material Handling Division, Milwaukee 1, Wisconsin.

BH-113A

ALLIS-CHALMERS

Circle 6 on Reader Service Card
SEPTEMBER, 1959



NEWS ABOUT AMHS

Los Angeles Sponsors MH Show

LOS ANGELES—The Third Western Regional Handling Show and Packaging Cavalcade will take place May 11 through 13, 1960, sponsored by the Los Angeles Chapter. According to **A. E. Flinck**, show chairman, the show will be keyed to existing needs of the ever-expanding multi-billion dollar western market. It will take place in the Great Western Exhibit Center in Los Angeles. Larger, heavier equipment will be placed outside the exhibit building. 75,000 square feet of outdoor space are available. There will be space for 275 exhibits inside the buildings.

Besides the traditional kinds of handling equipment, there will be special exhibits dealing with air, rail, truck, and steamship transportation.

The 1960 show is expected to break all previous records for at-

tendance. Applications for exhibit space are being received at the show office, 2807 Sunset Blvd., Los Angeles 26.

ROCHESTER—In July the Rochester Chapter scheduled a plant tour through the Gerber Products Co. This organization relies heavily on material handling equipment to maintain leadership in the 200 billion dollar baby food industry.

ROCHESTER—The Rochester Chapter held its May meeting in conjunction with the Genesee Valley Safety Conference, which ran for three days. "Industrial Trucks in High Hazard Areas" was the subject of the first session, with **J. M. Simmons**, Factory Mutual Engineering Div., as speaker. Two panels occupied the second session; their subjects were "Safety on Conveyors" and "Power Industrial Trucks." A movie on driver training was featured in the third session.



Montreal Elects Officers

MONTREAL—New officers for the Montreal Chapter are shown in the photo above. Seated, left to right: **N. Wall**, secretary; **I. Feldman**, first vice-president; **A. L. Johansson**, president; **W. L. Brown**, past president; **G. C. Allen**, treasurer. Standing, left to right: **J. D. Reed**, extension courses; **T. Clune**, special events; **J. J. Craddock**, membership; **W. G. Wilford**, advisory; **H. S. Jones**, past national president; **A. Viau**, meetings; **A. B. Rosser**, programs; **S. D. Wilson**, standards and education; **J. D. Hannen**, attendance.

(Continued on next page)



Palletted Nestiers
keep parts handy



CUT PARTS-HANDLING COSTS
AS MUCH AS 60%

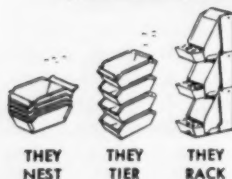
WITH **NESTIER**

BOXES AND BASKETS

Hundreds of manufacturers are stepping up production with these economical steel containers. Nestier Boxes and Baskets eliminate rehandling of parts in the work area. Filled in the stockroom, they tier in rigid stacks on pallets, conveyors or moving belts. Twin handles permit easy lifting or hanging from overhead conveyors. Parts can travel through all production operations including dipping or degreasing in perforated Nestier Baskets. Both Boxes and Baskets can be stacked alongside of workers or hung in hopper racks to provide convenient supplies of parts in a compact area. Empty, they nest neatly out of the way. Uniform construction permits you to take inventory by batch-weighting the contents. Nestier Boxes and Baskets are available in five sizes, 12" to 36" in length. For further information, fill in and mail this coupon today.

NESTIER CORPORATION

Subsidiary of THE METAL SPECIALTY CO.



THEY
NEST

THEY
TIER

THEY
RACK

Please send me further information on Nestier Boxes and Baskets.

Name Title

Company

Address

City Zone State

Nestier Corporation

4519 Este Ave., Cincinnati 32, Ohio

B-9

NEWS ABOUT AMHS

(Continued)

Past President Greet Overseas Handling Team

Past President J. W. "Wally" Hall was on hand to give some pointers to a Japanese material handling study team during the 1959 Exposition. The Japanese handling men, on a cross-country tour of installations, met with Commerce Department officials to exchange information on business conditions and trends. A spokesman for the group said they were most impressed with the Exposition and the technical sessions.



JAPANESE material handling team is flanked (left) by "Wally" Hall and Charles F. Hughitt, Department of Commerce. On the team's right are Thomas G. Drumm and R.W. Scott, also of the Department of Commerce.

Handling in Transportation

The Houston Chapter maintained a small booth in the local exposition recognizing Transportation Week. The chapter showed scale models, as shown in the photograph. From left to right, storage racks, oil field equipment manufacturing plant, and a self-leveling loading platform. Visitors received handouts, such as chapter bulletins and information on various AMHS activities.



COFFING *Quik Lift*

Electric Hoist

20 Models in
Capacities from
1/4 to 2 tons

Workmen like the new Coffing Quik-Lift Electric Hoist because it is easy to operate and light to handle. The aluminum housing is in sections for quick access to change voltages, limit switch, type of suspension or chain. Moving the Quik-Lift from station to station in your plant is simple and fast. The pistol-grip push-button control station is made of non-conducting plastic. Its design permits up or down operation while pulling trolley mounted hoists. Power to the controls is reduced to 115 volts for added safety. For new hoist efficiency specify Coffing Quik-Lift. Your Coffing distributor has them in stock and will give you complete details, or write for Bulletin ADH-65.



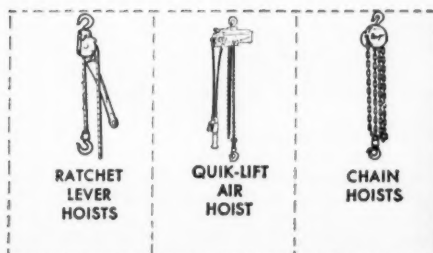
Pistol-Grip Push-Button Control

Lightweight Aluminum Housing

V-Type Brake for
Maximum Braking Surface

Easily Adjusted Limit Switch

Complete Line of Accessories



RATCHET
LEVER
HOISTS

QUIK-LIFT
AIR
HOIST

CHAIN
HOISTS

COFFING HOIST

DIVISION OF
DUFF-NORTON COMPANY

821 Walter Street • Danville, Illinois

Circle 60 on Reader Service Card for more information

"The more you load an Equipto shelf
the tighter it grips all by itself!"

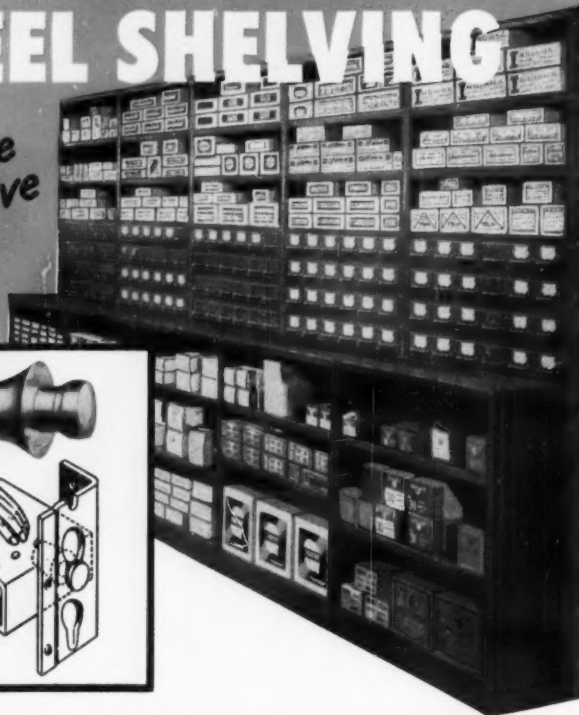
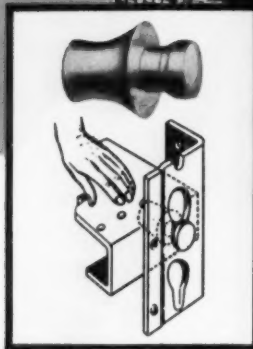
EQUIPTO

IRON-GRIP

STEEL SHELVING



with the
exclusive
stud



No nuts, bolts or tools needed when adjusting Equipto Iron-Grip Shelving. Exclusive steel stud permits 60% faster shelf adjustment on 1½" centers. The more you load it, the tighter it grips, yet shelf may be moved easily. You can vary arrangement of drawers, dividers, or shelves to suit changing storage needs. Four uprights per unit allow units to be moved without disturbing adjacent units.

Equipto Iron-Grip Shelving is immediately available from stock in all sizes, either open or closed, with or without dividers, bin fronts, drawers or label holders. Write today for complete reference manual No. 485; also free booklet "HOW TO SOLVE YOUR STORAGE PROBLEMS".



SHELVING



BENCHES



DRAWER UNITS



LOCKERS



EQUIPTO ROBE



STOCK CARTS



EQUIPTO ANGLE

Equipto

805 Prairie Avenue
Aurora, Illinois

CALENDAR of EVENTS

September 14-16

Material Handling Seminar
American Management Association
Chicago

September 14-18

4th Annual Midwest Work Course on
Plant Layout & Facilities Planning
The University of Kansas Extension
Center
Kansas City 12, Kansas

September 15-17

1959 Air Materiel Command
Packaging and Material Handling
Conference
Biltmore Hotel
Oklahoma City, Oklahoma

September 21-23

Packaging Seminar
American Management Association
New York City

October 4-6

Joint Industry Fall Meetings
MHI, ITA, ALTAPEM, Monorail
Manufacturers
Lake Placid Club
Lake Placid, N.Y.

October 10-13

26th CEMA Annual Meeting
Grand Hotel
Point Clear, Alabama

October 13-16

Second Congress of Material Handling
28 Rue Saint-Dominique
Paris, France

October 14-16

Warehousing Seminar
American Management Association
New York City

October 16-25

8th International Material Handling
Exhibition
Centre of Industries and Techniques
Rond-Point de la Defense
Puteaux (Seine)

November 3-5

Eighth Canadian National Packaging
Exposition
Packaging Association of Canada
Automotive Building
Exhibition Grounds
Toronto, Canada

November 16-20

ASME Automation Show & Confer-
ence on Material Handling
Trade Show Building
New York City

November 17-20

Packaging Machinery Manufacturers
Institute Show
New York Coliseum
New York City

Circle 74 on Reader Service Card for more information

MATERIAL HANDLING ENGINEERING

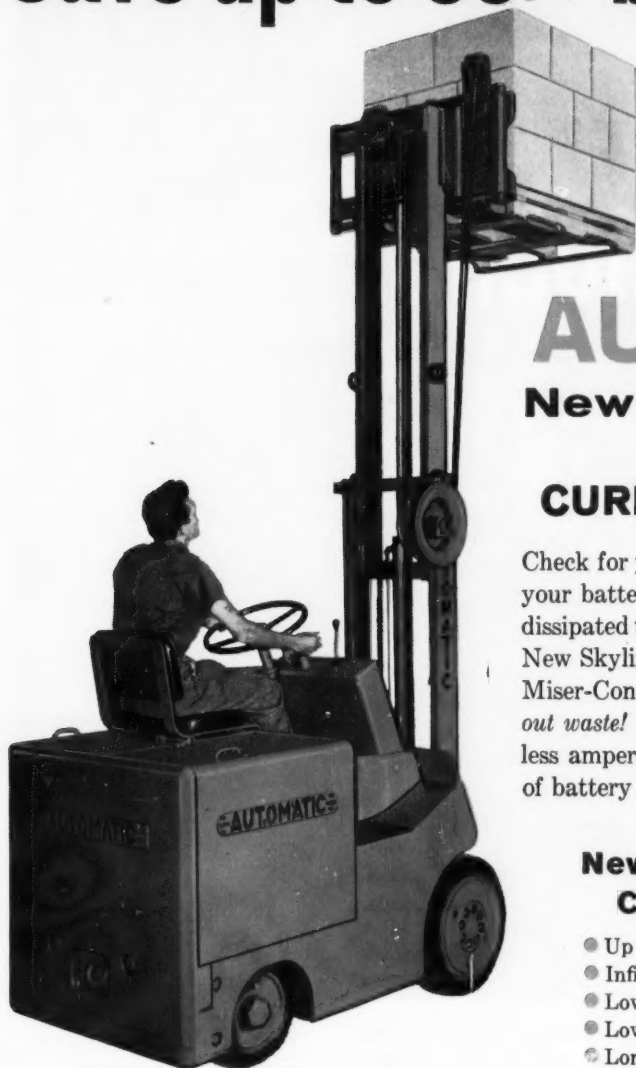
Save up to 60% battery power

**WHEN OPERATING
IN LOW SPEEDS**

with

AUTOMATIC'S New Skylift Electric Truck equipped with CURRENT-MISER-CONTROL

Check for yourself...you'll find that a substantial part of your battery power, while maneuvering in low speeds, is dissipated through heat loss by resistors. Now, Automatic's New Skylift Electric Model ELF equipped with Current-Miser-Control gives you the precise power you need *without waste!* It achieves low RPM ranges with up to 60% less amperage draw. Result—considerable saving in cost of battery power.



AUTOMATIC'S Model ELF Electric Truck

has been designed for operation in plants and warehouses requiring a highly maneuverable and efficient industrial truck, with fast travel speed and lift speed. Example—4,000-lb. model, loaded, has a 6-MPH travel speed. Capacities: 4,000 thru 10,000 lbs.

New Cost-Saving Benefits of the CURRENT-MISER-CONTROL

- Up to 60% less current draw operating in low speeds
- Infinite number of speeds
- Lower motor operating temperatures
- Lower cost per battery
- Longer battery life
- More driving power in low speeds
- Increased contactor-tip life
- Increased motor-brush life

Advanced Materials Handling at Less Cost to You

Please rush complete information on the Skylift Model ELF with revolutionary new Current-Miser-Control.

Name _____ Title _____

Firm Name _____

Address _____

City & Zone _____ State _____

141/P-9

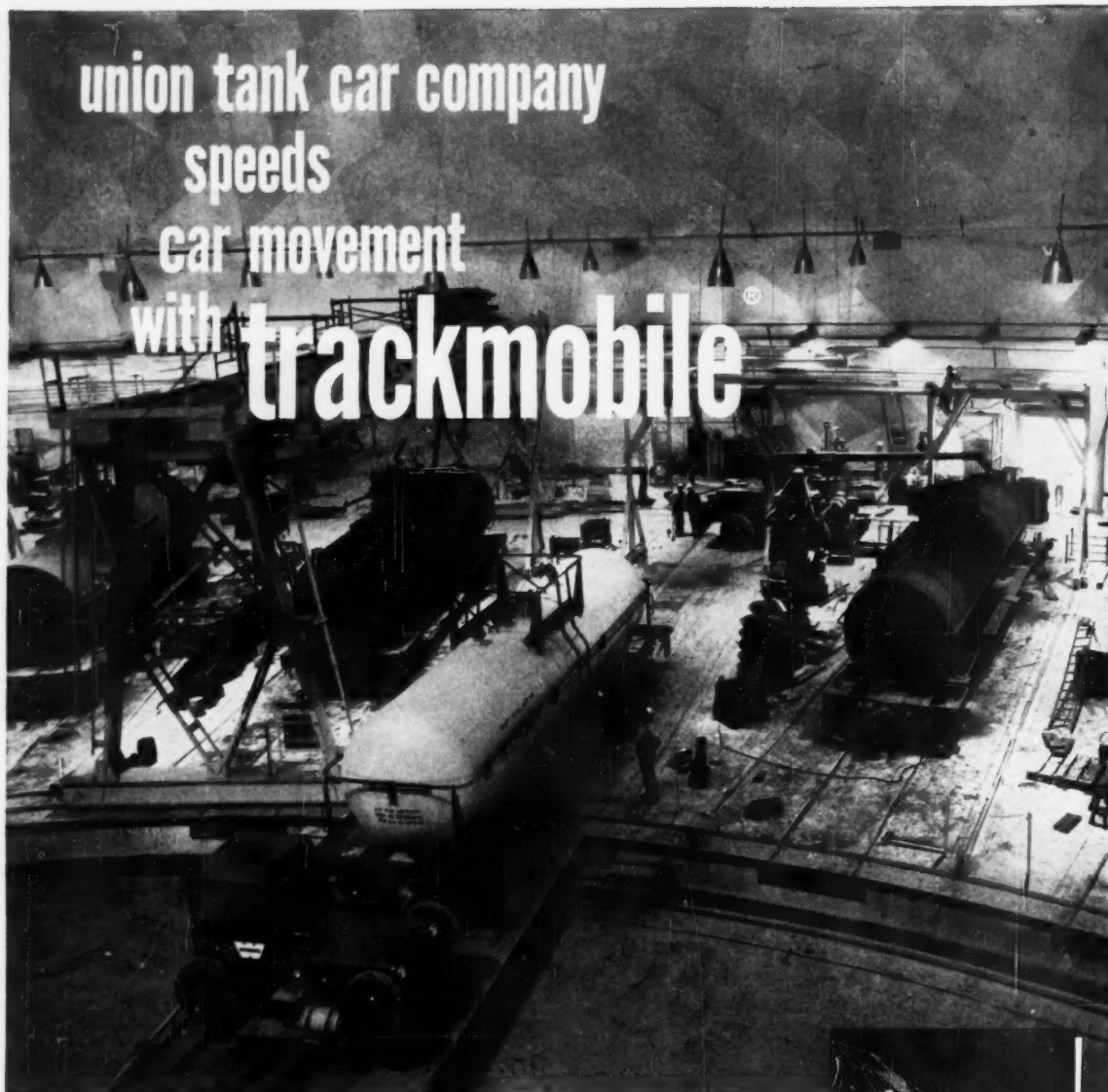


AUTOMATIC TRANSPORTATION COMPANY

Division of The Yale & Towne Manufacturing Company

141 West 87th Street, Dept. P-9, Chicago 20, Illinois
WORLD'S LARGEST EXCLUSIVE BUILDER OF ELECTRIC-DRIVEN INDUSTRIAL TRUCKS

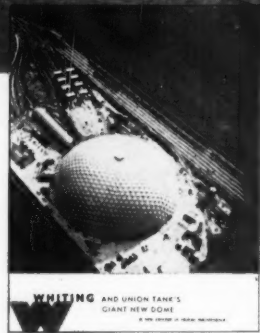
Circle 21 on Reader Service Card for more information



union tank car company
speeds
car movement
with trackmobile

Many railcars move quickly and efficiently in and out of one of the world's most modern railcar repair shops. A single Trackmobile handles them all at the Union Tank Car Company's giant dome-shaped plant near Baton Rouge, La. Trackmobile pulls them inside the shop and teams up with a Whiting Radial Transfer Table to keep all maintenance stations busy. A most versatile machine, Trackmobile transfers easily from rail to road. Plants throughout the country use it to haul, switch, and spot.

FOR MORE INFORMATION on Trackmobile at Union Tank Car Company write for Bulletin 245. *Whiting Corporation, 15624 Lathrop Avenue, Harvey, Illinois.*



75th year

COST-SAVING EQUIPMENT . . . THE WAY TO HIGHER PROFITS.



WHITING

MANUFACTURERS OF CRANES; TRAMBEAM HANDLING SYSTEMS; TRACKMOBILES; FOUNDRY, RAILROAD, AND SWENSON CHEMICAL EQUIPMENT.

Circle 186 on Reader Service Card for more information

MATERIAL HANDLING ENGINEERING

Circle 88 on Reader Service Card

B.F. Goodrich

check sheet for industrial tire information

Here are some basic facts about industrial tires—facts that will help you in selecting tires that will give you long service at low cost. Because there are so many factors involved in selecting industrial tires—loads, hauling surfaces, equipment, etc.—you should use this sheet as a guide only. Check those subjects on

which you wish more information, tear out this page, fold it up and mail it to B.F. Goodrich. We make a full line of industrial tires, so that the information we give you is complete and unbiased. Start saving on industrial tires. Mail this page today!

FOLD THIS FLAP DOWN HERE

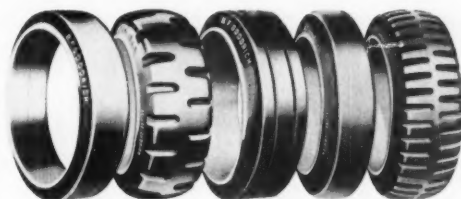
Pneumatic tire advantages



Pneumatic industrial tires cushion loads, protect floors and equipment, help reduce maintenance costs. You can use faster hauling speeds, make more trips per day. Pneumatics require a shorter turning radius, steer easily. B.F. Goodrich makes pneumatic tires for every hauling job, including new "wired" tires that defy damage from abrasive materials.

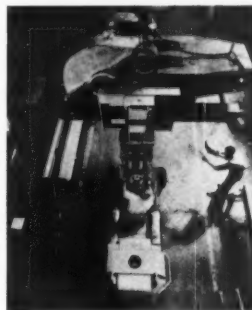


I would like further information on pneumatic tires.



Facts on solid tires

Solid tires can be used on many types of industrial power trucks, tractors and trailers. B.F. Goodrich makes 2 types of pressed-on solid tires—Regular that give needed cushioning without sacrificing long wear, and Deluxe Cushion that give the best combination of economy, steering, traction and cushioning possible in a solid tire. Pressed-on treads are bonded to a steel base by a special process which assures positive adhesion for the life of the tire.



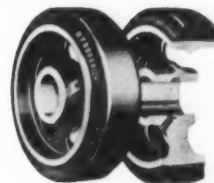
I would like further information on solid tires.

FOLD THIS FLAP UP HERE

When Vulcanized-On tires should be used



If your hand trucks, trailers, push carts, wagons and other free-rolling equipment are now on steel wheels, you should change to Vulcanized-On tires. They start, roll and stop easily—absorb shock and save breakage. Vulcanized-On tires have a high load-carrying capacity, are noiseless and protect floors and equipment. B.F. Goodrich has a complete, low-cost program of changing over your steel wheels to Vulcanized-On tires.



☐ *I would like further information on Vulcanized-On tires.*

TURN PAGE →

B.F. Goodrich

industrial tire check sheet

The importance of tread designs and compounds

Tread designs and compounds play a big part in the savings you can make on industrial tires. For example, if your equipment runs over such rubber-killers as oil or other petroleum products, you need tires made from B.F. Goodrich Oil-Proof compound. If equipment

goes up and down ramps, you need a tread designed for extra traction. Gear your tread design and compound to the job you do, and you'll realize extra savings through longer tire life. B.F. Goodrich makes all types of tread designs and compounds.

☐ *I would like further information on tread designs and compounds.*

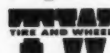
PLACE 4¢
POSTAGE
HERE

The B.F. Goodrich Company

Dept. TW-783

Akron, Ohio

How your **B.F. Goodrich**



Analysis man
can save you up to
50% on tire costs!

Your B.F. Goodrich Tire and Wheel Analysis man knows how to match industrial tires to materials handling jobs. Without cost or obligation, he will survey your operations—then make unbiased tire recommendations that will save you as much as 50% on tire costs. He can also give you money-saving maintenance tips. Save money on industrial tires. Mail this sheet today.

A special consulting service is available to manufacturers of materials handling equipment.

☐ *I would like further information on your **FREE TW Analysis Plan.***



NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Use this space for additional questions



Smileage!

B.F. Goodrich *industrial tires*

FOLD OVER TO GUMMED FLAP

YOUR ELECTRIC TRUCK BATTERY

Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 20, Pa.



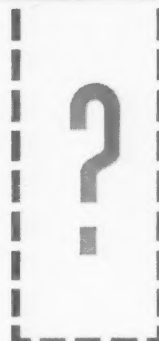
Electric Truck Annual Savings over gas trucks

approximately
\$400-\$500
average

1940

approximately
\$1000-\$1500
average

TODAY



FUTURE

Why miss out on these economies? See how electric truck savings have grown since 1940. You could be saving money right now. And if this trend continues, you can save more every year in the future.

EASE THE PROFIT SQUEEZE

Electric Truck Economy Over Gas Keeps Growing and Growing

Even way back in 1940, Exide-battery-powered industrial trucks were roughly 30% more economical than gas-powered trucks. Today they're roughly twice as economical. And the trend suggests still greater economy in the future.

Inflation has driven the cost of most things up sharply. But in the field of materials handling, it has actually favored electric industrial trucks. Examine the three main ingredients of industrial truck cost: fuel, maintenance and depreciation.

The ingredients of truck cost

The cost of gasoline has gone up about 80% since 1940. But the cost of battery power is still at about the same level. This is partly because the cost of electricity itself has actually decreased. And new batteries and chargers give you more capacity and life per dollar of cost.

Maintenance labor rates and parts prices have gone up for both types of trucks. But electric trucks need less than half the maintenance that gas trucks do. Depreciation has always been lower for electric trucks and still is. This is the result of longer useful truck life—estimated to be from 2 to 3 times as great as that of gas trucks.

New batteries mean improved performance

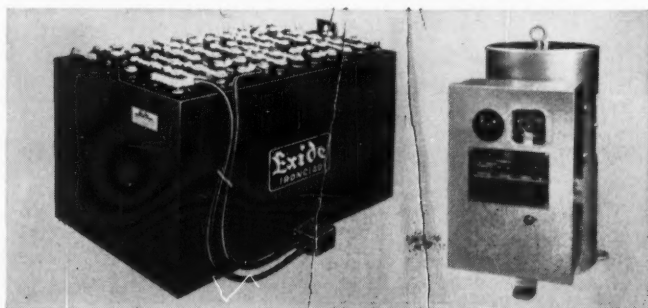
Today's electric industrial trucks not only offer greater relative economy than ever before, but also the highest performance ever. The combination of advantages makes them today's best materials handling bargain. Two years ago Exide introduced new improved truck batteries that pack more power into the same space and offer longer life of service. This means that every truck

can carry more power capacity for longer work shifts, longer runs, and higher productivity.

Typical savings

Records of thousands of trucks in a wide variety of typical applications indicate that average economies for electric trucks total up to \$1500 per truck per year as compared with gas-powered trucks. Why don't you help your company "ease the profit squeeze" by putting electric trucks to work saving you money right now. Exide's plan for leasing batteries and chargers makes it possible to switch with a nominal capital investment.

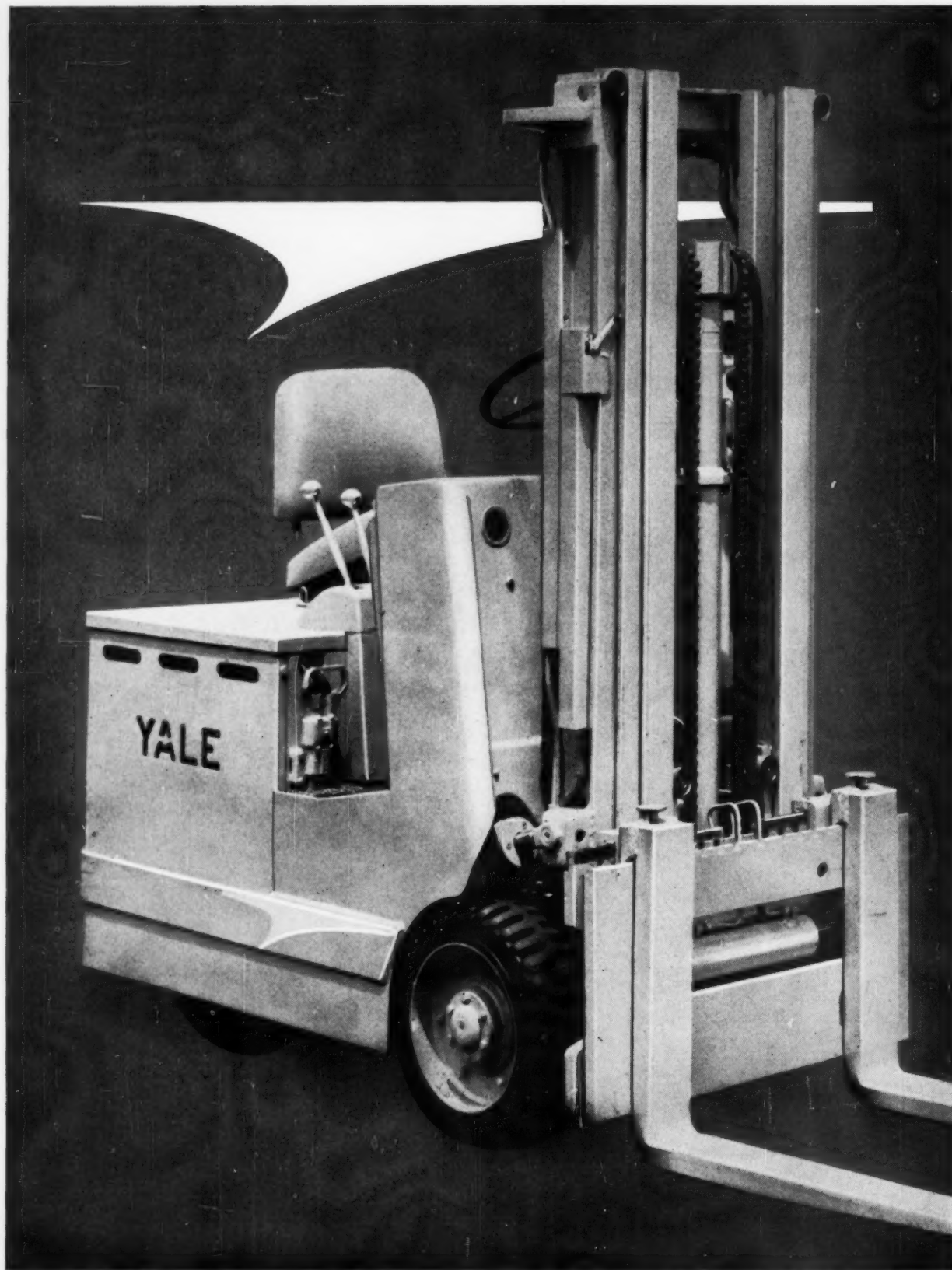
For data that will assist you in analyzing your own operating costs, write for free copy of 14-page Form 6262



New batteries . . . new chargers. Get the complete Exide power package. 50 years of constant improvement have gone into today's Exide-Ironclad Battery. New materials and advanced construction give it more power and longer life potential than ever. New vertical chargers save $\frac{3}{4}$ floor area mounting space. Maintenance is easier and less costly. Get both battery and charger from Exide. Save both ways.

For details on the new Exide-Ironclad Batteries, write for a copy of 8-page illustrated Brochure 6230

Exide®



Yale Materials Handling Division, a division of The Yale & Towne Manufacturing Company. Manufacturing Plants: Philadelphia, Pa., San Leandro, Calif., Forrest City, Ark.

NEW CONCEPTS IN DIMENSIONS FROM YALE

NEW YALE ELECTRICS • LOW • SPEEDY • MANEUVERABLE

Mechanically actuated carbon pile provides smooth speed control...produces infinite motor speeds to suit any operation cycle. Dual caster wheels mounted on ball bearings provide easy steering. Short turning radius. 71" height Triplex Mast available to give 144" fork height. Other features: hydraulic wheel brakes, removable battery box, H-I single lever control for multiple function attachments. Capacities: 2,000, 3,000 lbs. For full information, contact your Yale representative or write The Yale & Towne Manufacturing Co., Materials Handling Div., Philadelphia 15, Pa., Dept. KT4-H.

YALE[®]

**INDUSTRIAL LIFT TRUCKS
TRACTOR SHOVELS • HOISTS**

YALE & TOWNE

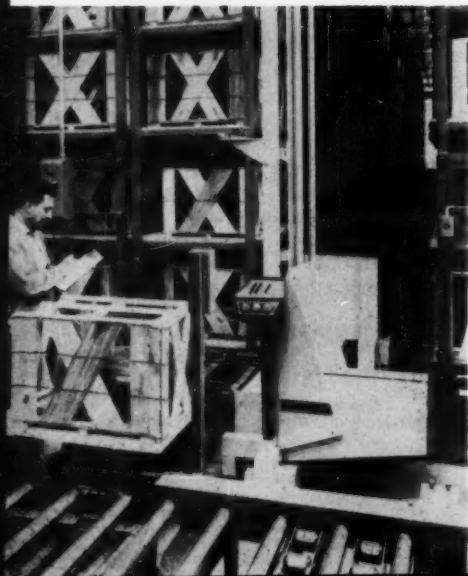
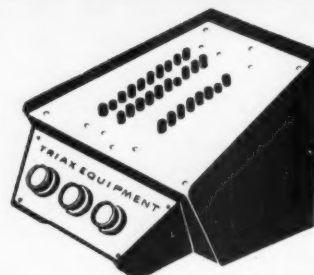
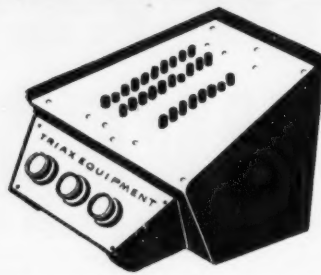
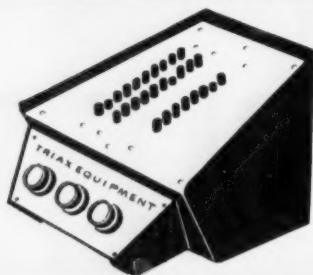
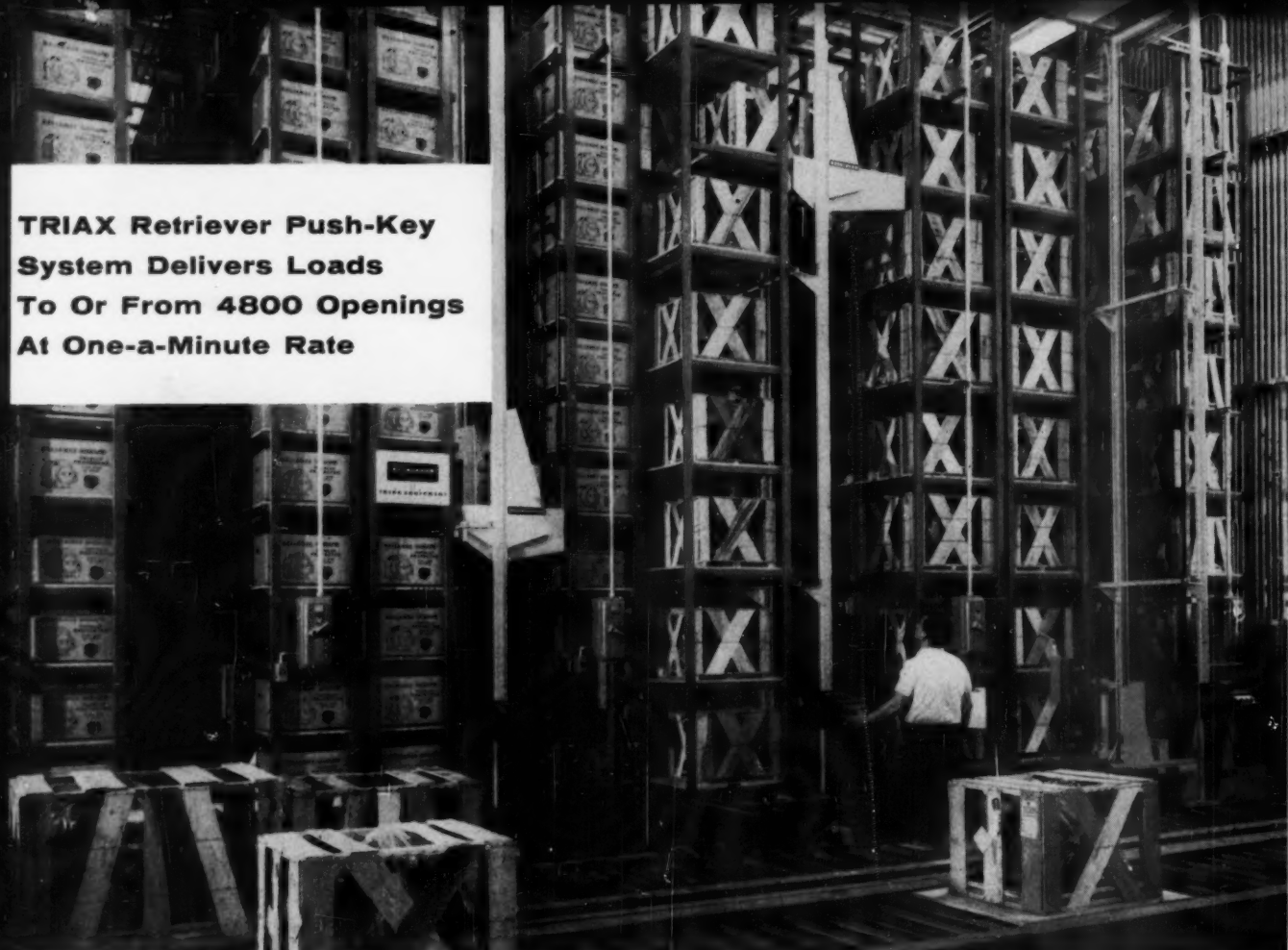
Products: Gasoline, Electric, Diesel and LP-Gas Industrial Lift Trucks • Worksavers • Warehouse • Hand Trucks • Industrial Tractor Shovels • Hand, Air and Electric Hoists

Circle 193 on Reader Service Card for more information

SEPTEMBER, 1959

41

**TRIAX Retriever Push-Key
System Delivers Loads
To Or From 4800 Openings
At One-a-Minute Rate**



4800 COMPARTMENTS OF UP TO 1000 POUNDS CAPACITY EACH...at the finger-tip command of one operator for loading, unloading, and delivery to or from a central terminal point with precise selectivity. Packed into 5100 square feet of floor area. The new TRIAX TWO-WAY RETRIEVER SYSTEM... opening new dimensions in handling and storage efficiency and economy. Available in any size to fit your needs. Let us show you how Triax Retriever floor-to-ceiling automatic storage can help you save manpower, space, and expense.

CAPACITIES AVAILABLE FROM 100 TO 3500 POUNDS

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3921 MAYFIELD ROAD CLEVELAND 21, OHIO EVERGREEN 2-2300

Circle 174 on Reader Service Card

HANDLING 'ROUND THE COUNTRY



GEORGE SPATTA (r) gets award

Clark's Spatta Receives Free Enterprise Award

NEW YORK — George Spatta, president of Clark Equipment Co., was one of several recipients of the American Success Story Award during recent ceremonies at the Waldorf Astoria Hotel. To Spatta, the contrast between the Waldorf and the Hells Kitchen section a few blocks away, where he was born, was as symbolic as the award itself.

"Our free enterprise democracy offers many paths to success," Spatta said at the award ceremonies. "We are in a new technological era with boundless opportunities for those with vision and the tenacity to study and master their chosen field."

Spatta also pointed out that the material handling area is one in which opportunity is especially great. This is because handling represents a large part of industry's manufacturing cost, and so presents a large target for improvement.

The American Success Story Awards are presented by the Free Enterprise Awards Assn., Inc., to individuals with notable up-from-the-ranks careers. Spatta's award cites his rise from development engineer to president of Clark.

MH Experts To Speak at Air Force Handling Conference

The Air Materiel Command will hold its 1959 AMC Packaging and Material Handling Conference at the Biltmore Hotel in Oklahoma City, September 15-17. Theme of the conference will be "The Air Force-Industry Team."

MHE editor **John Velardo** is chairman of the material handling sessions, which will consist of talks by material handling experts from industry and a panel discussion. The panel, which will consist of Air Force and industry representatives, will attack the problem of loss and damage in moving cargo by air, truck, and rail. **W. S. Mielziner**, president of Impact-O-Graph Corp., is chairman of the panel. He will be assisted by **Robert H. Macomber**, New York manager of the Marine Service Dept., Insurance Company of North America, and **Robert Hanna** of General Electric, Evendale.

Clyde Dean, general sales manager of the Yale Materials Handling Div., Yale & Towne Manufacturing Co., will tell about new developments in industrial trucks. **Glenn Johnson** of Clark Equipment Co. will discuss "The Economics of Containerization." The Association of American Railroads and the American Trucking Association will also participate in the conference.

Air Force installations will submit material handling displays in competition for a "Best of Show" award. The displays will show innovations in handling equipment or systems.



Counterbalanced Clamping

Bickerstaff Inc., of Columbus, Georgia, has developed a new palletless method of handling cases. This clamping fork arrangement is automatic, actuated by the weight of the load. In the photograph the forks are mounted on a 2000-pound-capacity Hyster lift truck. Note how the four lower cases, held by counterbalancing action, support the entire load.



Racks Have Long Life

These racks used for annealing sterling silver have a 2-year life—even though immersed 7 times a day in 1200-degree F annealing salts. The racks were fabricated for Handy and Harman by the Cambridge Wire Cloth Co., were formed from RA 330 steel. The annealing bath is 50 percent anhydrous potassium chloride and 50 percent anhydrous sodium carbonate.

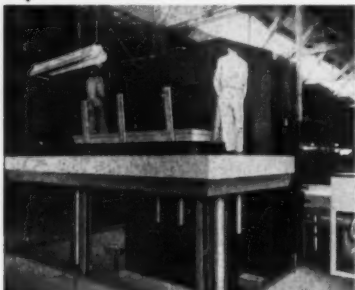
↓ **SPAN A TRACK**
to speed plant traffic



↓ **LOWER A TRUCK**
for faster loading and unloading



↓ **FEED A MACHINE**
with greater economy and efficiency



LEVELATOR LIFTS

handle heavy loads at lower cost

Operating on economical oil-hydraulic power, Rotary Levelator Lifts can be used wherever heavy objects must be raised or lowered. Standard models with 6,000 and 12,000-lb. capacities are designed for a wide variety of uses and are stocked for immediate delivery. Special Levelator Lifts in any capacity to several hundred thousand pounds can be engineered to your requirements. Simplicity of design and operating mechanism makes installation easy and practically eliminates any maintenance expense.

Write for Catalog RE-203



**LEVELATOR
LIFTS**

Manufactured by

ROTARY LIFT COMPANY

Division of Dover Corporation
1054 Kentucky, Memphis 2, Tenn.
Canadian plant at Chatham, Ontario
Circle 153 on Reader Service Card

MEN IN THE NEWS

At **Mead Containers, Inc.** . . . two appointments have been announced. **Kenneth G. Foeppel** has been named district sales



K. G. Foeppel



J. Donnelly

manager of Western New York and **Joseph Donnelly** is sales manager of the Miami division. Foeppel will make his headquarters at the company's Delavan Division in Syracuse, N.Y. Donnelly is a member of the Ohio State Bar Association and started with the company in 1950 as a salesman in the Cincinnati area.

At **Hewitt-Robins** . . . sales planning manager of the industrial products divisions is **M. R. Wilkens**. He joined the company as a salesman in 1946.



At **Union Metal Mfg. Co.** . . . **Calvin Friar** is assistant district manager in the Northern California and Northern Nevada district. He will operate from offices in San Francisco. He is a Registered Professional Engineer in Massachusetts and a member of the American Society of Civil Engineers.

At **Allis-Chalmers Mfg. Co.** . . . **Joseph F. Maloney** and **David W. Vannatta** are sales representatives in the New York district for Allis-Chalmers Industries Group. It has also been announced that **Robert Hanlon** is sales representative in the Cleveland district.

At **Pettibone Mulliken Corp.** . . . **Jack C. Rogers** is sales

manager of the Speed Swing Division. He was formerly assistant sales manager of the industrial division of J. I. Case Co. and most recently, eastern regional manager for Pettibone Mulliken Corp.

At **Continental - Diamond Fibre Corp.** . . . **W. R. Gotshall** is district manager of the



Indianapolis district sales office. He has been a sales representative in this office for 25 years. He replaces **R. E. Tappan** who retired recently after 33 years with the company.

At **Crown Cork & Seal Co., Inc.** . . . **Al B. Sheen** is sales manager of the company's mid-



west region. With headquarters in Chicago, he will be responsible for sales in Illinois, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, North and South Dakota, Colorado, and a portion of Wyoming.

At **The Dayton Rubber Co.** . . . **John Sly** is assistant sales manager of the industrial products division. **Joseph B. Maxson** succeeds Sly as regional manager of the central region with headquarters in Dayton.

At **Zenith Radio Corp.** . . . **John Mathieu** is district sales representative. His territory includes New Orleans and Shreveport, La.; Jackson, Miss.; Little Rock and Fort Smith, Ark.; and Memphis, Tenn.

At **United States Rubber Co.** . . . sales engineer for the battery separator department is **Eugene D. Conroy**. Previous to his ap-

**1-man
1-engine operation
11-ton capacity**



—give you full yard-handling coverage with the all-new **BANTAM CR-350**

Big yards, small yards, open or congested yards—here's today's top-efficiency rig for low-cost yard handling whatever the problems!

Just note these facts on the all-new BANTAM CR-350: it's the compact, extremely maneuverable, 11-ton-capacity self-propelled that travels and works with just one man, one engine. Profit from its speedier handling over an infinite range of jobs: handling manufactured or bulk materials, loading, transporting, stockpiling, stacking, sorting, scrap-handling. It even does in-factory handling with gooseneck crane-boom . . . travels with loads up to 5½ tons!

The BANTAM CR-350—most advanced of all self-propelled—has such important features as automotive-type power steering . . . independent travel, swing and hoist . . . rapid travel speeds . . . new, optional 4 x 4 drive . . . separate forward-reverse clutch . . . full 360° swing . . . foolproof, all-weather mechanical controls . . . all-vision cab.

"LET US DRIVE OUT TO DEMONSTRATE!"

See a BANTAM CR-350 perform at your own yard work . . . learn how fast it gets about spot to spot or yard to yard for lowest possible handling service. Mail coupon for demonstration or literature.



All-new BANTAM T-350—11-ton-capacity carrier-mounted crane-excavators.



All-new BANTAM C-350 crawler-mounted crane-excavators—capacity to eight tons.

NEW... just-printed 12-page catalog on BANTAM CR-350 takes you through its more modern design step by step, shows what it will do and how it saves through actual picture coverage of all kinds of jobs. Check and mail coupon.



SCHILD
Bantam Co.

251 Park Street, Waverly, Iowa

- ☐ Please have BANTAM distributor contact me for a C-350 demonstration. MH-241
☐ Send me new BANTAM CR-350 catalog. Also, catalog on:
☐ BANTAM T-350, ☐ BANTAM C-350.

Name

Company

Address

City Zone State

World's largest producer of truck crane-excavators

Circle 165 on Reader Service Card for more information

MEN IN THE NEWS

(Continued)

pointment, he had been with the company's Chicago sales office since 1945.

At Commerce Packaging Corp. . . . Donald F. Loughrey has been appointed general manager. He has worked in the packaging field since 1944.

At United Shoe Machinery Corp. . . . John C. Eldridge

is manager of sales development for Thermogrip hot melt adhesives and applicators. Also, William J. Blatchford has been placed in charge of installations and service.

At Jamison Cold Storage Door Co. . . . William M. Ryan is district representative in Minneapolis, Minn. He succeeds H. O. Johnson who has retired.

At LeTourneau - Westinghouse Co. . . . Wayne H. McGlade has been named product

development manager—earthmoving and related equipment. He was formerly assistant to the executive vice president.

At Insley Mfg. Corp. . . . E. H. (Curly) Herman is the new east coast district sales representative. He will assist and coordinate the sales efforts of distributors in the east coast area and the Provinces of Ontario and Quebec in Canada.

At Owens-Illinois Multiwall Bag Division . . . Frank Cannon has been named eastern regional sales manager. He will operate from headquarters in New York City.

At General Electric Co. . . . Kent J. Worthen has been named national sales manager for two-way radio. He will direct the sales activities of 60 district offices throughout the country and will coordinate the efforts of several hundred manufacturer's representatives who sell G. E. mobile radio equipment.

At The Joyce-Cridland Co. . . . Robert M. Tormey has been named sales manager of the newly-formed industrial division. He has been with the company since 1950.

At The L. H. Shingle Co. . . . John F. Muller is manager of the conveyor division. Formerly, he was manager of the power transmission division of American Pulley Co.

At C & D Batteries . . . Irving T. Bartlett, Jr. has joined the company's sales organization. He is associated with Packaged Industrial Power, Inc. Jersey City, N. J. representatives covering the New York City area.

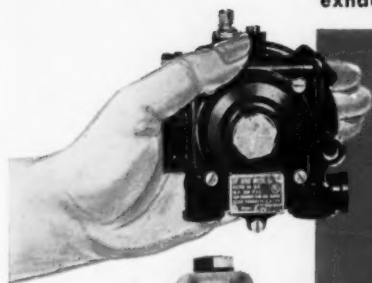
At Bucyrus-Erie . . . Charles B. Brockmeyer is sales engineer and Frank T. House is sales development engineer. Both men will work from the company's home office in South Milwaukee.

At Hyster Co. . . . George Waegener is supervisor of industrial engineering. He has been with the company nine years, most recently as plant engineer.

CONVERT with BEAM

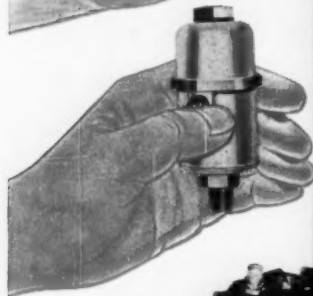
First with the Finest in LP-Gas Carburetion

You'll SAVE on FUEL, PLUGS, OIL, OVERHAULS and drastically reduce noxious exhaust fumes!



BEAM Model 60 VAPORIZER-REGULATOR

So small it's hard to believe! 4" diameter, 3" thick, weight 24 oz. Handles all engines up to 60 h.p. Eliminates using unnecessarily large and expensive regulators on the smaller engines.



BEAM FILTERLOCK

First in-line combination filter and solenoid valve, only 1 1/4" diameter. Amazingly efficient, saves space. Eliminates separate mounting and extra lines.



BEAM "WATER-RUNNER"

Installation System—Compact! Inexpensive! Special casting is mounted between thermostat housing and engine head. Saves installation time, cost and space.

There's a Beam LP-Gas Carburetion System for all Trucks, Automobiles, and Industrial Engines. Write for complete information and name of your nearest dealer.



SINCE 1936

BEAM PRODUCTS MFG. CO.

3040 Rosslyn St., Los Angeles 63, Calif.
CHapman 5-5791

Beam "Water-Runner" Systems, when installed, become a part of the engine. Cumbersome mounting plate and one water line are eliminated. Since these systems are designed for specific engines, one model will fit many trucks.

Circle 35 on Reader Service Card for more information



13½ ft clearance under bucket hinge makes it easy for Michigan to dump well over top of high truck sideboards.

How Michigan Tractor Shovel helps U. S. Steel save money on round-the-clock loading assignment

Combination in one machine of truck-like mobility, fast loading capacity, and exceptional dependability is helping save time and money for U. S. Steel at their Gary Works in Gary, Indiana.

This machine, a new Model 275A Michigan Tractor Shovel works fast . . . *four cubic yards per bucket bite!* It travels fast . . . *up to 28 mph.* And it's dependable!

The Michigan's most important assignment is loading stockpiled

"breeze," a by-product of oven coke used to sinter iron ore for the blast furnace. Average 10 ton loads of this bulky material take the Model 275A only three passes, 90 seconds.

"A very versatile machine"

"We find lots of other things for the Michigan to do, too," says George Ihle, general foreman, Docks and Auxiliaries. "It digs, loads and carries almost anything.

"We've used it to clear snow from streets and parking lots.

"It has dug, backfilled and loaded out dirt and stone.

"It often loads coal—typical eight-hour output: twenty-five 55-ton capacity rail cars.

Loads heavy rice stone

"It also frequently loads rice stone—dolomite for use as flux in the open-hearth furnace. The dolomite is fed into 14-ton haul trucks or 55-ton center-dump rail cars. In a 24-hour period, this loading amounts to about 675 tons.

"Other Michigan work includes maintaining haul roads . . . building truck access roads up the side of giant ore stockpiles . . . clearing oversized and frozen chunks of ore and coke breeze from the grates over the sinter plant truck unloading station.

Takes place of pick-up truck

"Michigan has even been used to take the place of a pick-up truck—carrying tools, pumps and equipment to work crews in various parts of the mill area. Its big bucket, of course, has the capacity of a pick-up.

"One of the Michigan's greatest assets is versatility," concludes Mr. Ihle. "We sure like the way it takes on and speeds one job after the other."



Bucket teeth speed loading out of wet or frozen stockpiles.

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division



2445 Pipestone Road
Benton Harbor 26, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

Circle 49 on Reader Service Card for more information

R-W "Zig-Zag" CONVEYORS

profitably convey products

UP

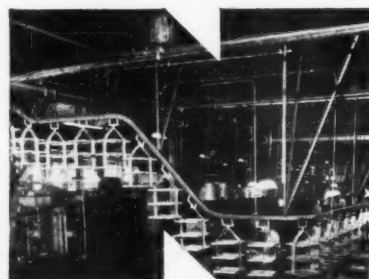
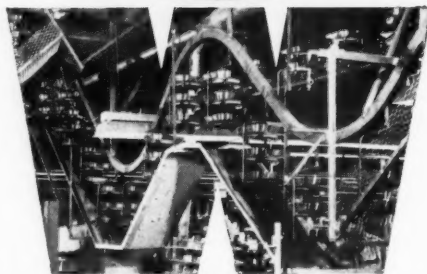
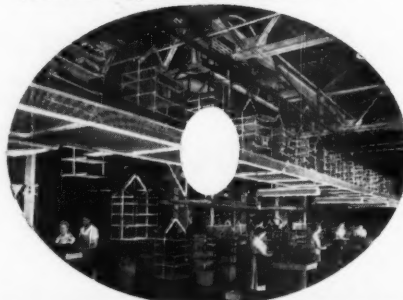
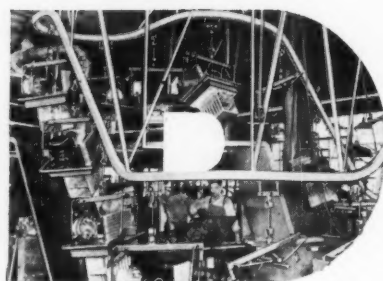
"Zig-Zag" FEATURES...

- **ECONOMICAL** to purchase, install and operate. Easily changed or re-located to meet plant alterations or expansion.
- **FLEXIBLE** . . . may be installed to move up, down, in, out and around. Ideal for level or multiplane systems, R-W "Zig-Zag" Conveyors carry unit loads up to 125 lbs. at speeds ranging from one inch to 100 feet per minute . . . the only conveyor with a proven multi-speed drive unit. Easy to install in any plant — large or small.
- **STRONG** . . . a continuous chain of alternate horizontal and vertical wheel units travel through a rugged steel track. Chain, track, power units and accessory equipment designed and manufactured to provide years of dependable service and trouble-free operation.
- **SAFE** . . . all moving parts of the chain are fully enclosed and protected from dirt, dust, etc.
- **EFFICIENT** . . . R-W "Zig-Zag" is the original conveyor of its capacity in this field . . . available in one, top-quality grade — inferior components are never offered as a substitution. Designed, manufactured and backed by the leading firm in the Overhead Materials Handling field for over 75 years — Richards-Wilcox.



SAVE...USE YOUR PLANT PERSONNEL TO INSTALL AN R-W "Zig-Zag" CONVEYOR.

It is easy to do . . . you merely take so many standard R-W "Zig-Zag" conveyor components and put them together into a custom conveyor to meet your exact requirements. It is economical to do . . . your own plant personnel can easily "self-assemble" and install an R-W "Zig-Zag" Conveyor. If you require assistance, there is a qualified R-W Sales-Engineer nearby to serve you. Ideal for small or very large installations. Naturally we will engineer and install a "Zig-Zag" conveyor system if you so desire.



REDUCE COSTS IN EVERY MANUFACTURING AND WAREHOUSE OPERATION . . .

Manufacturers today, caught in the squeeze of higher raw material costs, higher wages and a keenly competitive market for their products must reduce production costs to realize a year-end profit. The movement of materials, components and products through an entire plant offers you your greatest cost-cutting opportunity. A cost reduction that is extremely important for an over-all cost cutting in production processes could increase your annual profit as much as would a hard to get 50% increase in sales. R-W "Zig-Zag" Conveyors will help you cut costs in many ways . . . naturally they will reduce costs on an over-all basis by efficiently utilizing overhead space to provide a steady flow of materials for maximum production. "Zig-Zag" Conveyors provide a visually apparent inventory storage in the "free" area under the building trusses . . . help to make individual work stations more efficient operations . . . swiftly and safely carry products through all production processes with increased production speed, lower operating costs and less product breakage. Automatic devices of all types can be included in an R-W "Zig-Zag" Conveyor System to provide "machine-muscle" for the raising, lowering, moving and transferring of materials components and products. In most cases you are presently paying, through inefficient and costly materials handling methods, for a "Zig-Zag" System without enjoying its benefits. It will pay you to discuss the advantages of a "Zig-Zag" Conveyor with your local R-W Sales-Engineer soon.

"ZIG-ZAG" TO "TWIN-TRAK" . . . from automatic conveying to the complete automation in the handling of materials.

R-W "Zig-Zag" components provide the backbone of R-W "TWIN-TRAK" Overhead Automatic Dispatch Systems . . . the ultimate in automated conveying of materials, components and products. R-W "TWIN-TRAK" Systems consist of one or more power tracks and as many storage or free tracks as desired, plus the necessary switches, carriers, automatic controls and power equipment. R-W "TWIN-TRAK" Systems not only move products from one point to another, but automatically and economically convey components to predetermined work stations from overhead storage or inventory banks. Manufacturers who have installed an R-W "TWIN-TRAK" System have found that this unique system not only improves materials handling, but, because of its great versatility permits the coordinated use of special new production techniques and machinery to produce products faster and more economically.

Write today for additional information.

ON-THE-SPOT ENGINEERING SERVICE



Your local R-W Sales-Engineer is a factory trained materials handling specialist. He stands ready and willing to illustrate how an efficient R-W Overhead Conveying system will help you realize maximum production efficiency and economy. Whether you are planning a new plant or expanding present facilities, it will be to your advantage to let an R-W Sales-Engineer survey your problem and submit a recommended solution.

IN-OUT AND AROUND

R-W Manufactures a complete line of top-quality overhead conveyor systems to meet the rugged demands of industry. Write for specific catalogs . . .

- R-W "Zig-Zag" Continuous Powered Conveyor, Catalog No. A-93R.
- R-W "TWIN-TRAK" Overhead Automatic Dispatch Systems, Catalog No. F-192.
- R-W "TRU-TRED" Monorail Systems, Catalog No. A-64.
- R-W "SAFE-RAIL" Conveyor Equipment, Catalog No. A-94R.
- R-W "458" Chain Conveyor Systems, Catalog No. A-570.



Richards-Wilcox

MANUFACTURING COMPANY

"MATERIAL HANDLING DIVISION"

420 W. THIRD ST. • AURORA, ILL. • Branches in Principal Cities

Circle 151 on Reader Service Card for more information

NEW MOTO-TRUC X-Tend-R

all the flexibility of a FORK TRUCK
in $\frac{1}{3}$ less aisle width

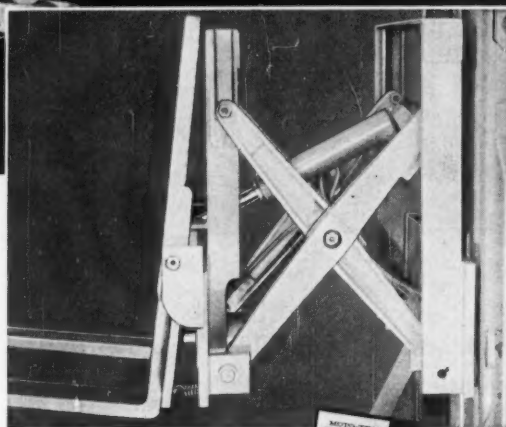


Everybody is looking for a better narrow aisle stacker. Just when you think you've found one it turns out to have a limitation.

Not so with the X-Tend-R! It's a rider type truck that combines the load handling flexibility of a counterbalanced fork truck with the narrow aisle features of an outrigger truck.

The X-Tend-R can stack from a 6' aisle (depending on the load length). It will handle any load width . . . stack loads in racks . . . eliminate wasted space between loads . . . handle any kind of a skid or pallet.

There are two X-Tend-R models for 2,000 and 3,000 pound loads. They are available in telescoping and non-telescoping models with lifts to 130" — more if you need it.



Stacking Stability with MAGIC CIRCLE STEER...

Your X-Tend-R will be stable as a rock even at full elevation. MAGIC CIRCLE steering provides solid four wheel support, plus turns up to 90°. There are no whipping casters to cause dangerous wobble or bucking . . . no complex steering linkage to increase maintenance or restrict turning.

Write For This Free Catalog



Largest Exclusive Manufacturers
of "Walkie" and "Small"
Rider Type Trucks



The MOTO-TRUC Company

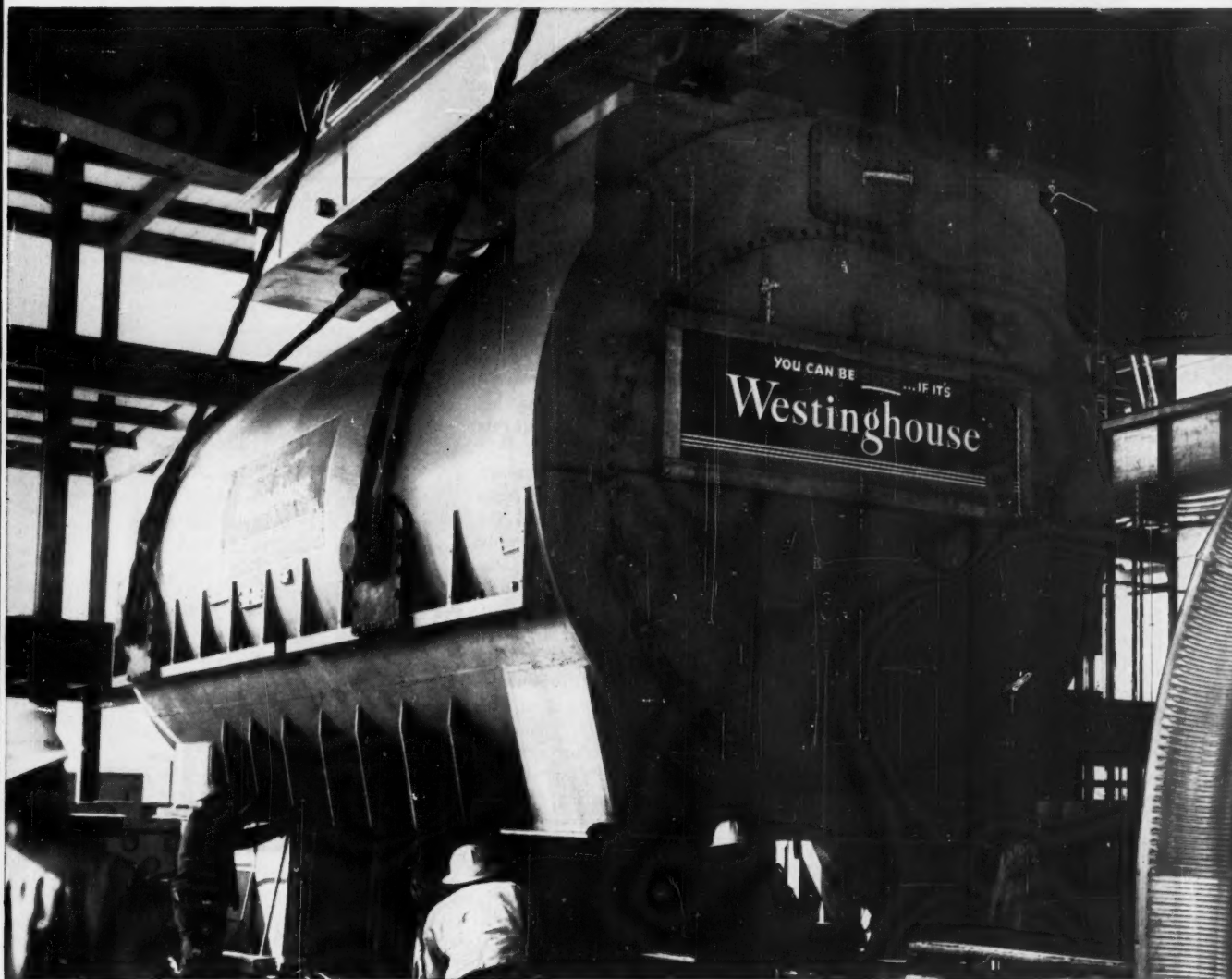
1955 EAST 59th STREET

CLEVELAND 3, OHIO

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MATERIAL HANDLING ENGINEERING

USS Tiger Brand — America's No. 1 Wire Rope



Westinghouse Can Be Sure because those are Tiger Slings

The generator stator plus lifting beam weighs 297 tons. It was built by Westinghouse Electric Corporation and delivered to the Thos. H. Allen Electric Generating Station in Memphis, Tennessee.

They couldn't take chances when they unloaded this mammoth power package from the railroad car, so they lifted it with Tiger Braided 8-Part Slings. Each of the eight parts is a 1" diameter Monitor Improved Plow Steel Wire Rope, and each is Tiger Brand—America's No. 1 Wire Rope. Four of the ropes are Right Regular Lay, and four are Left Regular Lay. They are braided in pairs so that Right Lay and Left Lay pairs are opposite each other. This reduces the tendency of the sling to kink or rotate under load.

American Steel & Wire makes a complete line of slings and fittings for all industrial applications. And if you need a special sling for a particular job, just give us the details.

For more information write to American Steel & Wire, Dept. 9102, 614 Superior Ave., N.W., Cleveland 13, Ohio.

USS and Tiger Brand are registered trademarks

Why Tiger Brand is your best buy

1. It is made by a company that maintains the most complete wire rope research and manufacturing facilities in the country.
2. It is designed by one of the country's most capable staffs of wire rope engineers. It is serviced by thoroughly experienced field representatives always ready with their assistance.
3. Every type of Tiger Brand Wire Rope is designed for specific applications. You get the *right* rope for the job.
4. It is made by one company, U. S. Steel, and every step of production from ore to finished product is carefully controlled and supervised to guarantee one high standard of quality.
5. Tiger Brand Wire Rope is manufactured by the largest single producer in the country.



**American Steel & Wire
Division of
United States Steel**

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United States Steel Export Company, Distributors Abroad

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NEWS ABOUT SPHE

How Members Benefit by Participating

by John Mount, president, SPHE



LAST MONTH I stressed again that we get out of an organization only what we put into it. That's a fundamental law of any group consisting of voluntary membership. There is more to being a good member than just attending meetings, listening to what the speaker has to say, and reading all the technical information the group publishes. These are the smallest benefits.

The big advantage is your personal association with your fellow packaging and handling engineers. That advantage can be as big as you want to make it. These are professional men with problems like yours. They're the type of men one likes to be able to pick up the phone and ask for information when tough problems come up. Knowing men like them can mean a whole lot to you in carrying out your assignments, particularly the unusual ones.

Let me tell you a story about three such men. This actually happened not long ago in our Philadelphia Chapter.

The problem was to package and ship a helicopter from this country to France—certainly not a run-of-the-mill assignment. Involved were the packaging engineers of the manufacturer, the contract packager called in on the job, and the insurance underwriters.

Because all three of these men were active members of the Philadelphia Chapter of our Society, they knew each other intimately. They could and did sit down con-

fidently and freely discuss the job at hand. Between them they eventually formulated the plans for the packaging and shipping of this intricate piece of equipment.

If these men had not known each other personally, I'm sure they still would have gotten the job done. I'm not saying that only SPHE members are good packagers. But maybe they wouldn't have done it as well, or as easily, or with the interests of all three so amply cared for.

This is how things often get done in industry. Three men, who knew each other only through a few hours spent together at meetings once a month, planned and carried out a very intricate assignment. Our Society proved to be the cohesive agent that brought them together. It could happen to you.

Executives Outline Future Projects

SPHE's board of directors and officers have drawn up plans for several projects for the future. At their summer meeting in Chicago, the executives called for still more activities to add to the services already provided members and industry. They discussed plans for a National Competition program, several educational projects, and industry service activities.

John Mount, SPHE president, called attention to the vital role of the Society. "Our Society has a history of providing valuable information and service to its members, to industry, and to educational institutions," he said. "These activities will continue on

an expanded scale."

According to Mount, plans are now being finalized for a renewal of SPHE's well known Packaging and Handling Competition. It will be larger than in past years and will be changed many ways.

Maryland to Hold Expo in November

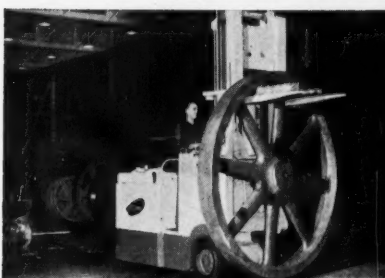
Officials of the Maryland Chapter have announced that the group will hold its Fourth Annual Eastern Handling and Packaging Show November 23 and 24. The site will be Baltimore's 5th Regiment Armory.

William K. Boettinger, one of the group's directors, points out that this year's show will be the largest ever. Last year over 2,000 people attended, with 50 companies exhibiting. This year Boettinger expects both figures to be larger. For the first time, by popular demand, it will last two days instead of one.

CLEVELAND—New officers were recently elected by the Northeast Ohio Chapter. They are: **Edward P. Patrick**, president; **Albert A. Ballew**, vice president-packaging; **Albert M. Joseph**, vice president-material handling; **Robert I. Denton, Jr.**, treasurer; **James L. Herbkersman**, secretary; **Thomas K. Zucal** and **Paul F. Schreck**, directors. Continuing as directors are **W. L. Kershaw** and **John Williams**.

COLUMBUS—The Central Ohio Division held its third annual conference at Capital University recently. Industry experts spoke on various phases of packaging and material handling. Summer meetings for this group were held at Buckeye Lake near Columbus, with facilities for recreation and business meetings.

Get The Facts On **ELPAR LEASING**



"Titan" Heavy Duty Fork Trucks

You can use ELPAR Leasing to put one of these cost cutting ELPAR industrial trucks to work in your plant immediately! Do it without a major cash outlay . . . and, pay the low monthly payments out of savings created by the new truck.



"Safe Hite" Fork Trucks



Low Lift Platform Trucks

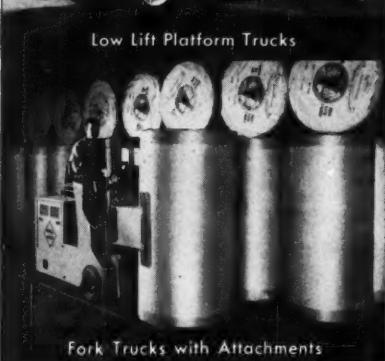
4 Leasing Plans ... Covering 150 ELPAR Models

1 Straight Leasing: The lowest cost form of leasing — payments are made in equal monthly installments for periods up to 5 years. Trucks complete with battery and charger may be leased. Equipment can be released as often as desired after the initial term has expired.

2 Lease With Option To Buy For \$1.00: This plan gives you the option to buy the equipment for \$1.00 at the termination of the lease.

3 Lease With Option To Buy At Fair Market Value: At the termination of the lease, this plan permits you to buy the equipment at the fair market value. Monthly payments under this plan are lower than the dollar option plan.

4 Fleet Lease: Companies planning to lease a large number of trucks will find this plan attractive and economical. Consult the main office or your local ELPAR man for details.



Fork Trucks with Attachments

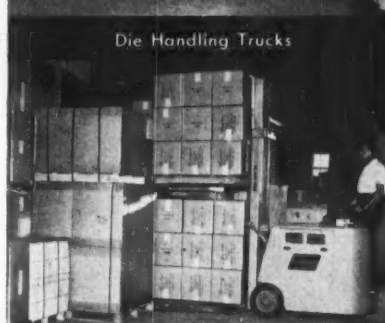


Die Handling Trucks



Mobile Cranes

GET THIS FREE FACT BOOKLET . . . it contains an explanation of leasing and rate tables that permit you to estimate leasing costs. Send for it today!



"Cargo Scout" Fork Trucks



"Air-Right" Fork Trucks



THE **ELWELL-PARKER** ELECTRIC COMPANY
4231 ST. CLAIR AVENUE • CLEVELAND 3, OHIO
In Canada: International Equipment Company, Ltd.

TWICE THE LIFE . . . ONE THIRD THE OPERATING COST

Circle 73 on Reader Service Card for more information

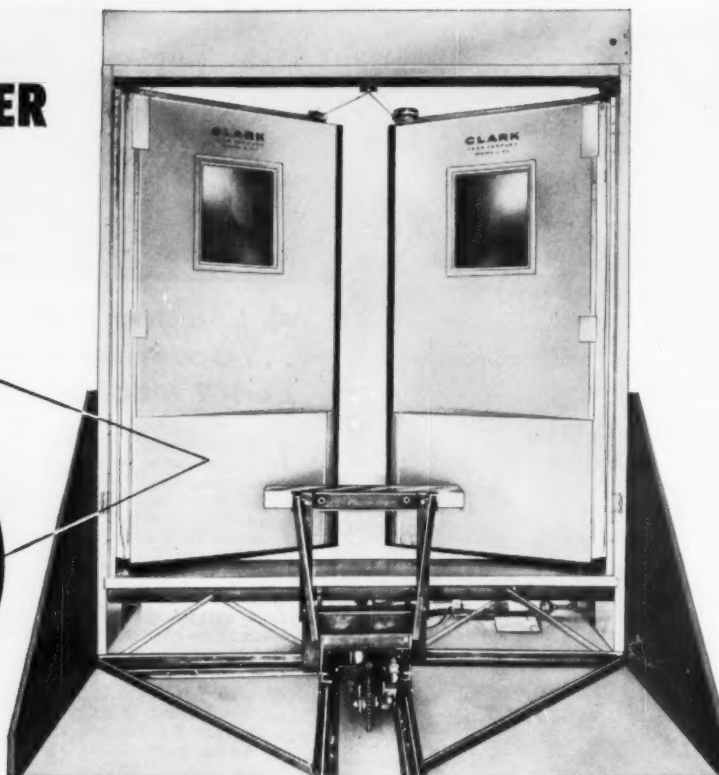
Takes Tough Treatment—

New CLARK

SHOCK ABSORBER

DOOR

The
BUMPER
Takes the Shock
... Not the
DOOR



WON'T RIP, WARP OR COME OFF THE FASTENINGS

There was no mistaking the buzz of excitement that greeted the premier showing of the CLARK Shock Absorber Door. Visitors to the Materials Handling Show in Cleveland watched in open admiration as an air-powered ramrod pounded the door open with trip-hammer regularity.



20 times per minute, 6 hours per day for the duration of the Show, the door was banged open, returning every time to tight, accurate closure.

This graphic demonstration proves the Shock Absorber Door outlasts any contact door on the market without wear, tear or repair. Exclusive URETHANE-Filled Bumper takes the

shock. Flexibly suspended hinges let the door "ride with the punch". Neoprene seals eliminate drafts. Spring Return is guaranteed.

If you want to keep traffic moving, write for the full story on this low-cost, easily installed door. Widths: 6' - 3'. Heights: 7' - 10'. Please specify size of opening.



CLARK DOOR COMPANY, INC.

(SINCE 1878)

514 Hunterdon St.

Newark 8, N. J.

Circle 40 on Reader Service Card for more information

MATERIAL HANDLING ENGINEERING

Circle 164 on Reader Service Card➤



increased output from present plant...

BETTER ON ALVEY - ENGINEERED CONVEYOR SYSTEMS

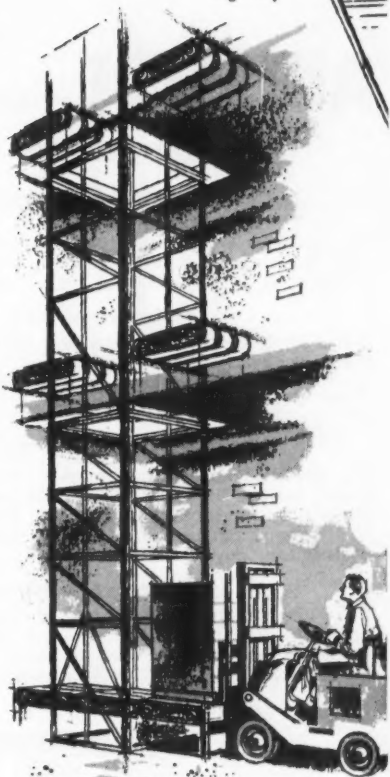
Increasing floor space doesn't always increase flow space . . . or output. Your handling problems may be better solved through a completely fresh approach. "Live" storage, reduced manhandling, improved pacing, faster, smoother intake of materials and outgo of products . . . whatever it may be, Alvey engineers take in the whole problem . . . create a comprehensive solution.

Within your industry, chances are good that conveyor systems engineered by Alvey have increased output . . . cut production costs, often 30% and more. Get together with Alvey engineers in the pre-planning stage. Write or call

ALVEY

CONVEYOR MANUFACTURING COMPANY

9299 Olive Street Road • St. Louis 24, Mo.



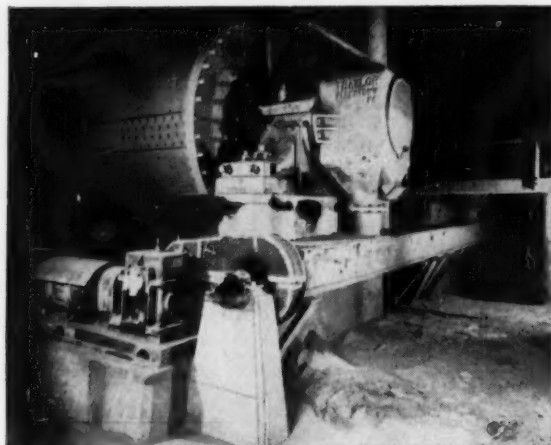
ALVEY...serving these famous names and many more: WESTERN ELECTRIC • PET MILK • GAYLORD CONTAINER • GENERAL FOODS
SPRINGS COTTON MILLS • STANDARD OIL • MONSANTO CHEMICAL • AMERICAN AIRLINES • SEVEN-UP • INLAND STEEL

Circle 7 on Reader Service Card for more information

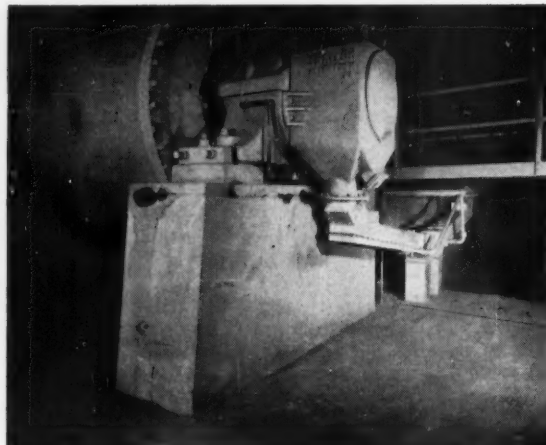
SEPTEMBER, 1959

55

The Arithmetic of Materials Handling



BEFORE: Dirt, noise and mechanical breakdown were constant problems in this cement plant, where two mechanical conveyors were used to collect raw materials. A 5 h.p. motor driving auxiliary equipment wasted valuable space and power, required frequent maintenance. Spillage clean-up wasted costly man-hours.



AFTER: Clean, simple, quiet. Notice the difference two 8" F-H Airslide® fluidizing conveyors have made. No dangerous moving parts. Nothing to lubricate. Auxiliary equipment and foundations are gone. Power needs are now only $\frac{1}{8}$ of previous needs. Fluidizing saves wear and maintenance.

AIRSLIDE® Fluidizing Conveyor minimizes material loss . . . maintenance . . . moving parts

If you are now handling dry, pulverized materials, the F-H Airslide Fluidizing Conveyor can help you stop noise, and air-pollution, as well as speed flow and reduce maintenance cost.

Simplicity Itself

F-H Airslide conveyors fluidize dry, pulverized materials with low pressure air.

These materials literally flow at high speed, down the inclined conveyor. Power requirements are small.

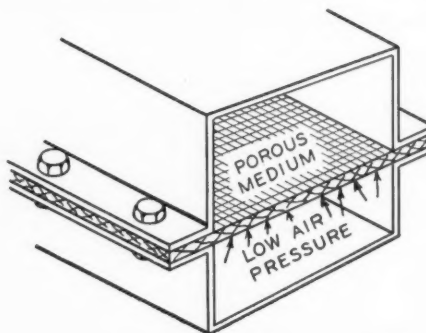
Flexibility, Low Cost

For unlimited applications, Airslide conveyors take up little space, and can be used singly and in combination with other Fuller pneumatic conveying systems. The movement of fluidized material can be around corners, between floors, through walls—nearly any conveying distance.

Better Housekeeping

Can Fuller conveying systems help eliminate your housekeeping problems—cut your maintenance and handling costs? Write today, outlining your problem in handling dry, finely-divided materials. Fuller will gladly make appropriate recommendations.

"Pulverized Materials Flow Like Water!"



FLUIDIZING PRINCIPLE: Porous supporting medium divides conveyor section into two "compartments". Dry material flows down inclined conveyor, fluidized by low-pressure air entering beneath porous medium.



4483
FH 59

FULLER COMPANY

164 Bridge St., Catasauqua, Pa.

SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION

Birmingham • Chicago • Kansas City • Los Angeles • New York • San Francisco • Seattle

MODERNIZE CHOOSE HOISTS THAT SAVE THE MOST

You name the hoisting problem. Whatever the requirements, there's an MMM hoist to handle your lifting with money-saving efficiency. Call your nearby Shaw-Box Distributor for practical help in selecting the best type of hoisting equipment for each load handling task. Or, write us for literature.



AIR HOISTS

Load Lifter Air Hoists with wire rope load line. 1 to 15 tons. The 5-cylinder radial motor has a high starting torque; provides smooth operation at all lifting speeds. Speeds infinitely variable to 37 FPM, depending upon capacity. Pendant cord control standard; throttle control available. Mechanical load brake never needs adjustment. Compact design results in low headroom advantages. Lug, push trolley and hand-gear trolley suspension.

Budget Air Hoists. 1/4, 1/2 and 1 ton. Compact and light in weight. Link and roller chain types. Explosion proof motor cannot burn out. Spark and corrosion resistant link chain type models. Speeds infinitely variable to 75 FPM, depending upon capacity. Pendant cord control. Safety hooks standard. Rigid mount type and push trolley available.

ELECTRIC HOISTS

Load Lifter Series "700" Wire Rope Electric Hoists. 1/2 to 15 tons. Fast, heavy-duty hoists with two automatic brakes and safe 24-volts at the push-button control. Two-speed models for spotting fragile loads safely. Lug suspension and push, hand-gear and motor-driven trolleys available. Hi-hook model increases length of lift.

Load Lifter Series "600" Wire Rope Electric Hoists. 1/2 and 1 ton. Low headroom construction. Tough, light-weight hoists that speed production processes. Separate load and motor brakes act simultaneously. Single and two-speed models with 24-volt push-button stations. Lug or hook suspension; push and motor-driven trolleys available.

Budget Electric Hoists. 1/4 to 2 tons. Complete, low-cost hoists for fast load handling service. Come ready to hang up, plug in and operate. Use little electricity. Pendant cord control standard. Separate motor and load brakes act simultaneously. AC, DC and 12-volt battery-operated models. Hook suspension. Trolleys available.

HAND HOISTS

Budget Army Type Hoists. 1/4 to 10 tons. Integral push, hand-gear trolleys are adjustable to fit I-beams in a number of sizes. Low headroom design permits high hook lift. Efficient spur gearing and load brake speed hoisting action. Extensive use of strong aluminum alloys saves weight and reduces effort needed to travel the hoist. Spark and corrosion resistant models available.

Budget Chain Blocks. 1/4 to 10 tons. Light, tough aluminum frame seals in spur-gear mechanism and automatic load brake. A 25-lb. pull on the hand chain lifts a 500-lb. load. Fast acting brake speeds and simplifies lowering. Hook suspension. Trolleys available. Ask about spark and corrosion resistant models.

Budget Differential Hoists. 1/4, 1/2 and 1 ton. A durable, low-priced lifting tool for occasional use where high efficiency is not required. The aluminum alloy yokes assure both lightness and strength. Precision machining makes operation easy and compactness saves headroom.

Budget Roller Chain Block. 1/4 to 2 tons. Spur-gear for highest efficiency. A pull of 45 lbs. on the hand chain lifts 1/2 ton. Light and strong. Mechanism enclosed in sealed housing — operates in grease. Automatic brake holds load safely at any desired point.

Tugit — the Lever-Operated Hoist. 1/4 to 3 tons. A spur-gear, light-weight lifting and pulling tool you can carry around. Has a thousand and one uses. Operates easily at any angle, even in close quarters. A 42-lb. pull on the handle lifts 2 tons. Spark and corrosion resistant models.

Budget Gantry "A". Frames. 1 and 2 tons. For low-cost mobile lifting service. Caster equipped. Shipped knocked down. Easy to assemble with I-beam purchased locally.

Budget Hi-Cap Trolleys. 3 to 20 tons. Adjustable push type. Wheels have crowned treads for easier movement, longer wear. Bumpers protect wheels. No lubrication required. Spark and corrosion resistant models.

Budget Geared-Type Trolleys. 3 to 20 tons. Adjustable to fit 8" to 24" I-beams. Easy action geared drive wheel and guide are weatherproof aluminum alloy. Hand chain is cadmium plated. Spark and corrosion resistant models.

Budget Cord Reel. Keeps hoist conductor cord out of the way. Reels off in any direction. Also useful for portable tools with polyphase motors to 7 1/2 hp; single phase to 1/2 hp.

Budget Conductor Cord Trolley. Used in any number to hold hoist or other conductor cord aloft on monorail systems and crane I-beams.

Budget Trolleys. 1/4 to 2 tons. Travel the hoist smoothly on ball bearings. Adjustable to fit I-beams of several sizes. Spark and corrosion resistant models.



OVERHEAD LOAD HANDLING EQUIPMENT

Products of

MANNING, MAXWELL & MOORE, INC.

Shaw-Box Crane & Hoist Division • Muskegon, Michigan

In Canada: Manning, Maxwell & Moore of Canada, Ltd., Galt, Ontario

Circle 115 on Reader Service Card for more information



USEFUL LITERATURE

Special Speed Control Fork Truck Series:

"Acro-Smooth" speed control permits safer operating according to this company. It means far better inching in tight places and removes the hazards of traveling with the load elevated when moving in or out from a pile. Smooth acceleration prevents spilling loads, means less strain on drive parts. The speed control is available on Elpar's new F-50T series electric trucks, 4,000 to 6,000 lbs. capacity. Literature gives full details.

The Elwell-Parker Electric Co.

Circle 201 on Reader Service Card

Bins For Any Parts Storage:

Flexi bins are built to give accessibility, quick adjustment, and fast stockroom service. They make inventory taking easy. The company says there is a Flexi bin to meet any parts storage need. This bin catalog shows how they will save you time and money. Features are snap-in dividers and sliding shelves. Dividers permit immediate alteration of compartment widths. No nuts, bolts, or tools are needed. The shelves slide easily and smoothly into place, and lock automatically. Catalog has special sections for bulk and long racks and bins, and for small parts bins.

Burroughs Manufacturing Co.

Circle 202 on Reader Service Card

Quiet Conveying:

Silent-Top conveyor is ideal for conveying cans, jars, bottles, and small parts in a single line. Quiet, high speed operation without lubrication is possible by a continuous nylon track under both the load and return sides of the belt. Lower return strand of belt is supported for clean and safe operation with no catenary. Available in carbon steel or in stainless steel.

M-H Standard Corp.

Circle 203 on Reader Service Card

System Delivers Cartons To Number of Trucks:

API report No. 105-98-2 describes an automatic order picking system. Key component is an Atronic Model 420 automatic carton selector. And an order insertion control console equipped with order memory features. This combination results in a system which delivers cartons to a number of trucks simultaneously in a prescribed sequence. The

system is equally suitable for delivery of full truck orders to a number of trucks being loaded at the same time.

Atronic Products, Inc.

Circle 204 on Reader Service Card

Scotchlite Letters:

These reflective letters are easily applied to any clean surface. For use in lettering pipes, switch boxes, extinguishers, doors, meters, equipment, etc. Requires no lettering ability to use. It is said to outlast painted signs. Available in $\frac{3}{4}$ inch, 2 inch and 3 inch sizes.

Earl Houska Signs

Circle 205 on Reader Service Card

Abrasion Resistant Wheels:

A folder describes characteristics and advantages through case histories of the Disowheel. A chart compares the wheel's tread with other wheel tread materials. Company says the wheels are as strong as steel, resilient as rubber, due to Disogrin, a polyurethane elastomer. The elastomer meets these high standards of abrasion resistance, resilience, and tensile strength.

Disogrin Industries

Circle 206 on Reader Service Card

Electric Truck Advantages:

Major features of the construction and operating characteristics of the battery-powered industrial truck are presented in an industry-sponsored 18-page booklet. Called "Why We Use Battery-Electric Industrial Trucks" the literature presents many quotations of what users have to say about the product. Technical advances in equipment performance cited include: higher travel speed, increased lifting speed, and reduction in turning radius. In a 3-page section devoted to power source, the batteries, chargers, motors, and controls are reviewed in non-technical language. Up to three copies of the folder will be sent without cost upon receipt of a business letterhead. A charge of 20 cents per copy will be made for orders in excess of three copies. Send requests to: The Electric Industrial Truck And Allied Products Mfrs., One Gateway Center, Suite 758, Pittsburgh 22, Pa.

Industrial Truck Selector Guide:

Over 150 models to fit all requirements are illustrated in this 20-page booklet. This guide is designed to help all material handling men in setting up new or in revising present systems in relation to specific plant problems. Selection factors presented include: capacity, frequency of use, power source, and use of semi-standard or special trucks. Additional facts on selection of pallets and skids for use with the different model trucks, truck attachments, and special die handlers and tractors, make this a must booklet for material handling reference.

Automatic Transportation Co.

Circle 207 on Reader Service Card

Wear Resisting Containers:

Durable Wire-Tainers are made in a variety of sizes and capacities to fit most any requirement. They're designed to cut your operating costs, and speed production. Open base construction gives easy transporting and storage with fork trucks, platform trucks, hand pallet trucks, straddle trucks or cranes. They are made for easy, fast stacking. They fold down easily, 5 containers folded take only the space of one set-up container.

Springport Steel Products Co.

Circle 208 on Reader Service Card

General Service Manual:

A 48-page general service manual published by C & D Batteries, Inc. It details the operation, maintenance, charging, trouble-shooting, and repair of Slyver-Clad motive power batteries. Various charging methods are explained, and boost charges, manual charging, modified constant voltage charging and the two rate methods are discussed. You are shown how to use the cadmium electrode method for determining internal battery trouble.

C & D Batteries, Inc.

Circle 209 on Reader Service Card

Set-up In Seconds:

Fast power-outrigger operation on rubber tire machines. For highway travel, outriggers retract completely with floats folded snugly against the ends of the outrigger boxes. Takes only 56 seconds to get outriggers to normal working position. Each outrigger ad-

YOU'RE AHEAD

because the
specialized experience of
two pioneer companies
in front-end loaders
is now combined...

Now Tractomotive Corporation has become part of Allis-Chalmers... and that means we'll be able to serve you better than ever. One very important reason is that the specialized experience of each organization in its field cannot be surpassed.

Allis-Chalmers pioneered its history-making HD-5G in 1945... has led the field in crawler shovel design and performance ever since... now offers the most complete line of such equipment in the industry, with bucket sizes from 1½ to 7¼ cu yd.

The Tractomotive team has been building heavy-duty wheel loaders since 1948... has consistently pioneered developments of great value to users, including torque converter drive and single-lever shifting control.

Through the combined facilities of these two pioneers,



ALLIS-CHALMERS
— pioneer of the world's first successful hydraulically-controlled crawler-mounted tractor shovel.
result of 14 years' leadership



TRACTOMOTIVE
— one of the first to develop heavy-duty rubber-tired loaders.
result of 11 years' leadership

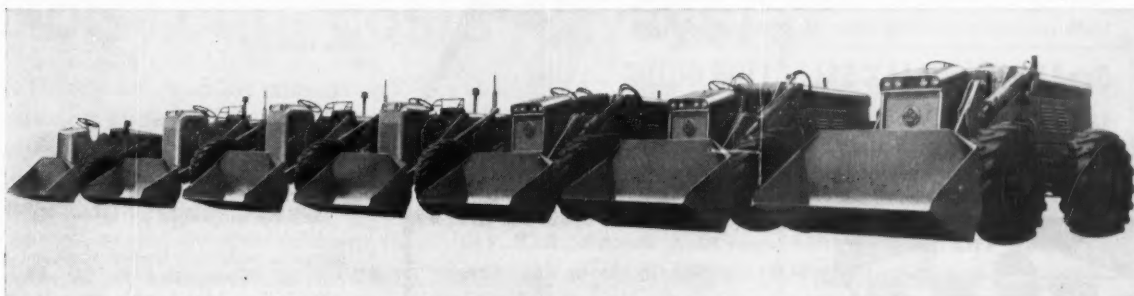
we offer you industry's most complete line of front-end loaders, on rubber or tracks... with these added basic advantages to back it up!

- another modern plant joins Allis-Chalmers' extensive facilities for manufacturing construction machinery
- a company-wide record of engineering leadership in all types of heavy-duty equipment
- widespread research activity that insures continuing progress
- original factory parts and blue-chip parts control
- increased man power in sales and service

See 'em at work—your Allis-Chalmers dealer will be glad to demonstrate the machine of your choice—wheel or track-mounted, whichever meets your job needs best. Just give him a call. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

YOU'RE **with a TRACTOLOADER**
AHEAD ...a complete line now built
and backed by Allis-Chalmers

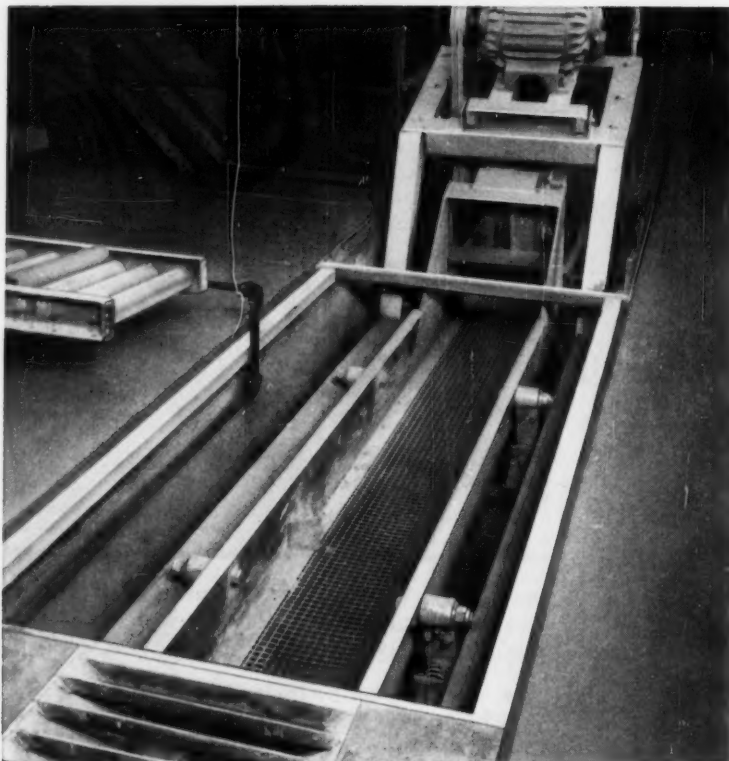
Seven models—34 to 130 hp—up to 9,000-lb carry capacity. Torque converter drive in every model.



move ahead with **ALLIS-CHALMERS**
... power for a growing world



Circle 24 on Reader Service Card for more information



Photograph shows an Ajax Lo-Veyor installed out of the way below the floor. Floor grids similar to those shown in foreground removed to show arrangement of combination conveyor pan and screen.

AJAX Vibrating Conveyors Do Two Or More Jobs

**for price of
one machine**

With today's skyrocketing costs, the importance of reducing non-productive expense was never more urgent. Large and small plants are saving money in first cost, processing cost, and maintenance cost with

Ajax Lo-Veyors engineered to fit your requirements.

Photograph shows an installation designed to simplify and speed up handling and separating bulk materials flowing from 10 production lines.

Send for latest AJAX SELECTION GUIDE

Learn how Ajax Vibration Engineering Service can help you cut your costs. Phone, write, or send coupon for your copy of this helpful book.



AJAX FLEXIBLE COUPLING CO. INC. •••
21 Portage Road, Westfield, N. Y.

In Canada—The Alexander Fleck, Ltd., Ottawa

Please send Ajax Lo-Veyor Selection Guide to

Name _____

Concern _____

Address _____

Circle 4 on Reader Service Card for more information

... USEFUL LITERATURE

just independently to ground level. For on-the-job moves it takes only 20 seconds to retract all four outriggers to travel position with 8 inch ground clearance. One of the feature writeups in Number 134 of "The Lorain News,"

The Thew Shovel Co.

Circle 210 on Reader Service Card

"Pic-A-Pump" Catalog:

Contains 576 pages of engineering data, arranged for convenient selection of pumping units and materials of construction to meet specific applications. Many hundreds of pump types, models, and sizes with capacities covering almost any head condition, are carried, along with list prices. Requests for this catalog should be written on company letterhead to: The Allis-Chalmers Manufacturing Company, Box 512, Milwaukee 1, Wisconsin.

Steel Framed Pallet Rollers:

Fully welded and stress relieved for long life, these pallet rollers also have a large bearing area for heavy loaded pallet protection. Equalizer design retains the parallelism and alignment of frame under all conditions. Crowned design gives floor protection and free, easy rolling. Equipped with heavy duty precision type fully lubricated ball bearings. Dead hexagon axles prevent turning in the frame. They're cotter keyed on each end for easy service.

Ace Engineering Associates, Inc.

Circle 211 on Reader Service Card

All Aluminum Food Service Equipment:

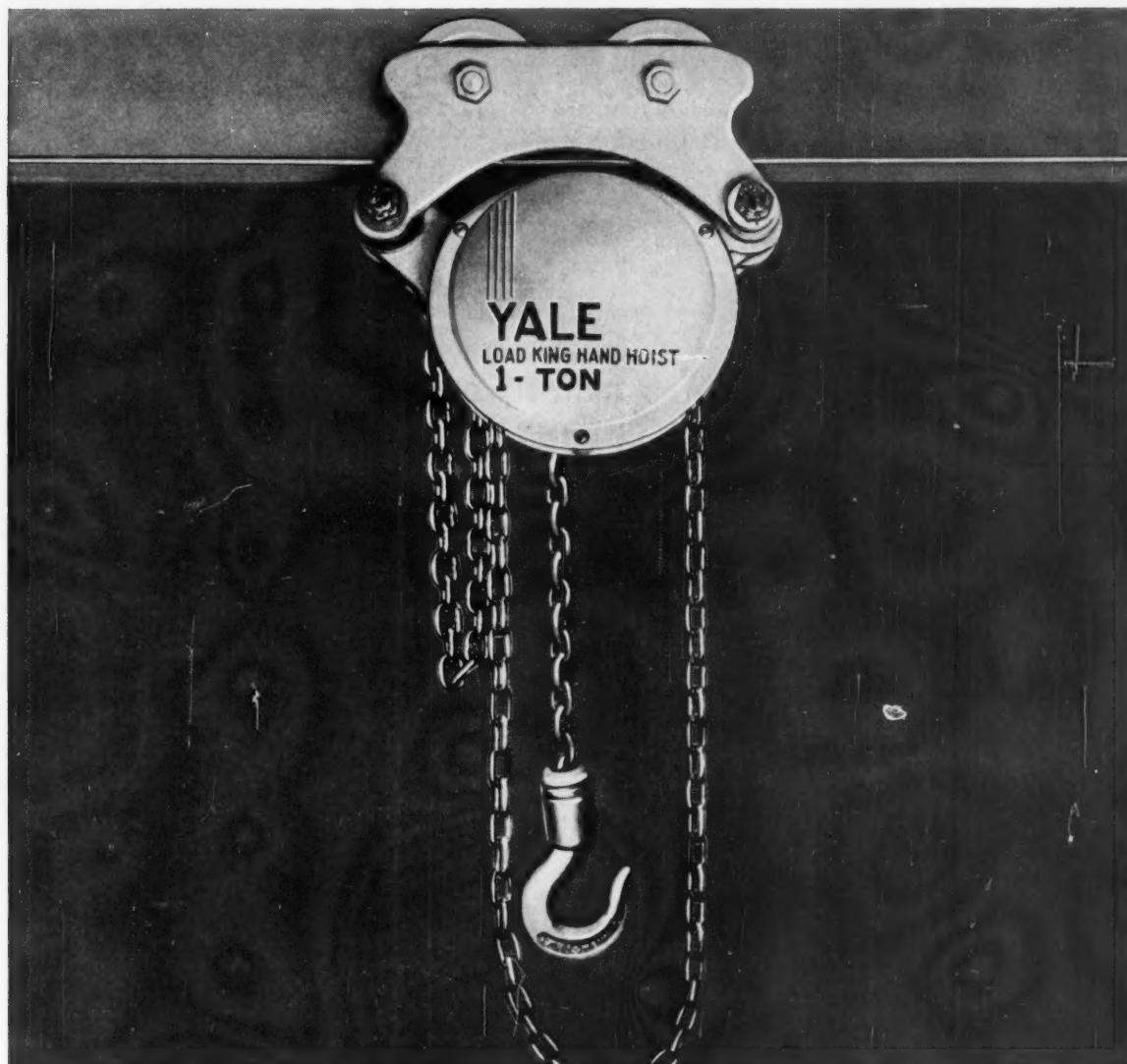
The complete Cres-Cor line of racks, cabinets, dollies, and traycarts are described in a 4-page bulletin FL-264. It contains 60 illustrations of the various types of mobile and aluminum products. Five types of mobile conveyors are included.

Crescent Metal Products, Inc.

Circle 212 on Reader Service Card

Light-Duty Package Handling Conveyors:

Detailed information on Models 540 and 610 in available bulletins. Bulletin 540 gives descriptive line drawings and complete specifications on the 540 roller bed package handling conveyor. It's designed for low-cost, speedy material handling. Bulletin 610 describes the Model 610 slider bed power belt conveyor. This floor conveyor is available in trough or table type. It's especially suited for handling jobs on



New Yale Lightweight Trolley Hand Hoist cuts costs 4 ways!

1. Offers up to 95% efficiency! 2. Lifts $\frac{1}{2}$ to 12 tons with amazing speed for a hand hoist. 3. Shielded bearings pre-lubricated for life. 4. Fewer parts to maintain. To these 4 economy features, add synchromatic load brake—light-weight for greater maneuverability. Trolley an efficient headroom saver of maximum flexibility. This Yale hoist is *durable*—will give years and years of rugged service. Available with plain or geared trolley wheel. Simple adjustment for different size I-Beams. The Yale & Towne Mfg. Co., Yale Materials Handling Div., Phila. 15, Pa., Dept. DH 3-H.

YALE®

INDUSTRIAL LIFT TRUCKS
TRACTOR SHOVELS • HOISTS

YALE & TOWNE

Yale Materials Handling Division, a Division of The Yale & Towne Manufacturing Company. Manufacturing Plants: Philadelphia, Pa., San Leandro, Calif., Forrest City, Ark. Products: Gasoline, Electric, Diesel and LP-Gas Industrial Lift Trucks • Worksavers • Warehouse • Hand Trucks • Industrial Tractor Shovels • Hand, Air and Electric Hoists

Circle 197 on Reader Service Card for more information

Haul, lift, stack, load, unload with one R-18 Moto-Bug® and



**quick-change
attachments:**

**FORK LIFT
HOPPER BODY
TAILGATE BODY
PLATFORM DECK
UTILITY BLADE
AUTOMATIC COUPLER**

Now you can do all kinds of material-handling with one basic unit, and low-cost attachments. Kwik-Mix® R-18 Moto-Bug with 7½-ft. fork lift handles 1500 lbs. at 15-in. load center. As a power wheelbarrow, or with platform deck, it hauls loads up to 3000 lbs. R-18 also has utility blade, and an automatic coupler (780 lbs. drawbar pull) for towing wagons, carts.

12 m.p.h. forward and reverse speeds, with no clutching, no shifting, add up to more trips per hour. It's rugged, with low maintenance — simple to maintain. A smaller S-10 Moto-Bug with multiple attachments is also available. Both models can be equipped with exhaust fume control, L.P. gas equipment, spark arresting muffler, electric starter. See Kwik-Mix distributor for demonstration. Also ask about the big 22½-ft. Hi-Lifter fork truck.



**MAIL
TODAY**

KWIK-MIX COMPANY, Port Washington, Wisconsin

Send literature on: ☐ R-18 ☐ S-10 Moto-Bug ☐ Hi-Lifter

NAME _____ TITLE _____

COMPANY _____

DIVISION _____

STREET _____

CITY, STATE _____ KM906 MHE



KWIK-MIX® MOTO-BUG®

A division of
Keckring Co.

Circle 107 on Reader Service Card for more information

... USEFUL LITERATURE

assembly lines or where light loads are moved within or between departments.

A. B. Farquhar Div.,
The Oliver Corp.

Circle 213 on Reader Service Card

Handling Material In Congested Areas:

Here's a new "how" booklet that's designed to show the place for the stand-up, end-control truck in up-to-date material handling systems. Called "Dock Facts and Factors" it serves as a ready reference guide. Intermittent operations, short to medium-distance hauls, high stacking, congested-area operation, and truck and car loading are some Docker applications discussed. A book that you'll want to add to your library.

Automatic Transportation Co.

Circle 214 on Reader Service Card

The Hoist Manufacturers Association has published a booklet of specifications for electric wire rope hoists. This is the first of a series of recommended minimum standard hoist specifications. The booklet defines requirements for hoist construction, and outlines basic information that should accompany any inquiry sent to a hoist manufacturer or distributor. The specifications to be published will cover hoists of the hand chain, ratchet lever, and electric chain types. Copies of the specifications are available from members of the Hoist Manufacturers Association or from its headquarters at One Thomas Circle, Washington 5, D. C.

Low Cost Fly Ash Handling:

Methods using pneumatic conveyors for low cost fly ash handling are detailed in a 16-page bulletin FF-49-1. Included are the Airslide fluidizing conveyor, the Fuller-Kinyon pumping system, and rotary compressor. Control panels, feeders, rotary bin discharge valves, material level indicators, and Fuller-Kinyon pipeline diverting valves are also described.

Fuller Co.

Circle 215 on Reader Service Card

WHAT IS THE TREND IN HOISTS?
See page 139

AMERICAN MONORAIL DOES IT!



20% BOOST IN PRODUCTION

20% SAVING IN LABOR

Lowering a partly assembled trailer top from an upright jig. Five holsts are used because some tops are made in 3 sections. This is a 44-ft. American Monorail crane. A 30-ft. crane and 150 feet of Monorail track also help speed production.

The following are direct statements made by an executive of Richardson Homes Corporation, world's 3rd largest mobile home builder at Elkhart, Indiana.

We chose the American Monorail System because they offered the best product at the least possible cost, plus the finest engineering service available.

"We have been able to realize a 20% cut in labor costs . . . The Monorail system eliminated 16 hard laboring jobs—4 in each of 4 departments.

"Production has increased at least 20% because of our Monorail and we have virtually eliminated backsprains and accidents that used to be prevalent."

AMERICAN MONORAIL



ENGINEERED MATERIALS HANDLING



1129 EAST 200th STREET CLEVELAND 17, OHIO

MEMBER OF MATERIAL HANDLING INSTITUTE AND MONORAIL MANUFACTURERS ASSOCIATION

Circle 17 on Reader Service Card for more information

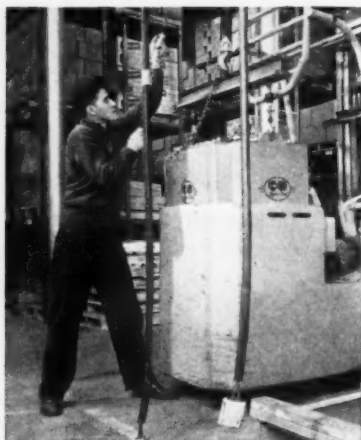


*The battery
that makes
the difference...*

**C & D Slyver-Clad®
gives trucks extra lift!**



MODERN HANDLING—C&D battery-powered electric trucks move more than 800 tons of foodstuffs daily. Material handling here is as modern as tomorrow and includes electric trucks to get top efficiency. The C&D Slyver-Clad equipped trucks are clean; provide smooth, quiet power all day while unloading freight cars and trucks, stacking goods, and delivering merchandise to loading docks; and require practically no maintenance.



DEPENDABLE PERFORMANCE—C&D's Five-Fold, Slyver-Clad insulation and retention has virtually eliminated shedding as a determining factor in battery life. By utilizing the unneeded space, C&D batteries have the longest, thickest plates of any truck battery—which means extra life and highest capacity. In addition, C&D's exclusive Hi-Impac cell jar and cover material eliminates truck downtime due to cracked or broken jars and covers.

MORE POWER FOR GRAND UNION—One of the toughest jobs for an industrial truck battery is a grocery warehouse operation. Grand Union, Mt. Kisco, New York, stores more than 4,000 items weighing 12 million pounds in its new 11-acre warehouse. C & D Slyver-Clad® batteries work hard through the full daily shift, giving consistently dependable performance and power to spare—for pennies a day.



ADVANCED DESIGN—C&D electric industrial truck batteries incorporate all the most advanced features of battery design. Time-tested Slyver-Clad construction packs in extra power... provides extra life. For the full story, write for Bulletin IT-528.



Since 1906

C & D BATTERIES, INC.
of Conshohocken, Pa. ... Attica, Ind.

Sales and Service Offices in Principal Cities from Coast to Coast

Manufacturers of Slyver-Clad® Industrial Batteries • PLANTCELL® and PLANTAC® Batteries for Communications, Control and Auxiliary Power • Producers of Autoloy® Silicon Chargers

Circle 41 on Reader Service Card for more information

*Trademark

MATERIAL HANDLING ENGINEERING



NEW HEIGHT FOR HANDLING

The stature of the material handling science is about to rise again. It's going to have its own training center.

The Material Handling Equipment Distributors Association plans to convert a Newport, Rhode Island, estate into headquarters for training and information. This will be the first sustained program in which people working in all phases of material handling will be able to exchange ideas and come away with answers to their individual operating problems.

The curriculum will stress seminars. In them, material handling men will freely exchange thoughts and experiences on systems and equipment installations. The Center will have every type of handling device—common, uncommon, and experimental—for demonstrations. Users, manufacturers, and sellers of equipment will be urged to use the facility. Instructors will be chosen on the basis of distinguished work in material handling. They will include users as well as manufacturers' and distributors' personnel. Trainees will be urged to bring specific problems. A course will last one week. Each class will be limited to 20 trainees.

To head the Center, MHEDA has chosen Harry Freeman, Chairman of their Engineered Equipment Committee. President of Freeman Industrial Service, Inc., of Providence, he is one of the leading material handling engineers of the country. Inventor, designer, and salesman, he has combined technical ingenuity with practical know-how in devising handling systems for dozens of companies, large and small. On top of that, he has already run successful material handling training courses. Mr. Freeman will be full-time director.

The Training Center will not compete with colleges or other institutions now offering material handling courses. Mr. Freeman believes that many of the students who attend will have had enough experience to teach college courses. He expects many to be graduate engineers. He plans for the neophyte as well as the operating executive to have ample opportunity to learn about new techniques and equipment applications.

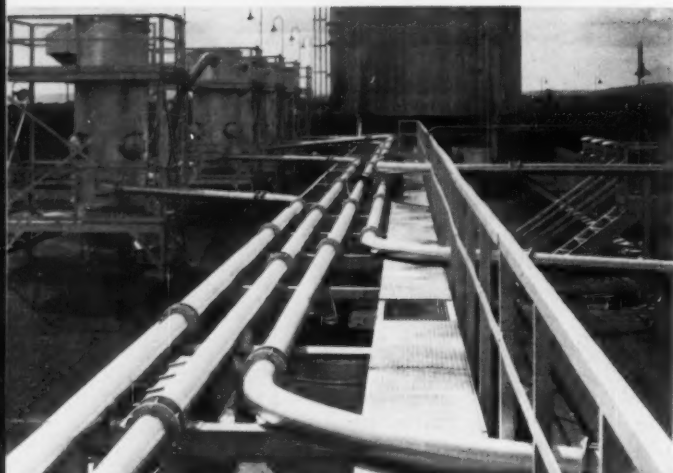
The Center will operate on a non-profit basis. All income will be spent for education and training. Purchase and remodeling of the property is to be financed by interest bearing bonds offered to all companies concerned with material handling. MHEDA hopes to schedule the first classes in November of this year. (Those interested in any phase of the Training Center program may write to Harry Freeman, Director, MHEDA National Training Center, Box 537, Newport, Rhode Island.)

This could develop into a great contribution to American industry. One thing is sure: It will be a valuable learning place for all material handling men.

The center exemplifies, again, what hard working, imaginative men of common interest and purpose can do when they work together. This is quite a project for an association just a bit over four years old!

We offer to the MHEDA National Training Center every assistance and service that we may have at our command.

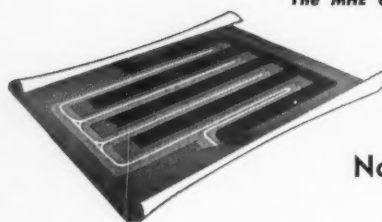
Ed Lighten
Executive Editor



Fuller Co.

RUBBER PELLETS move through pneumatic lines from scales in one section of the building up to the roof. The lines turn and lead into the five mixers shown on the right.

The MHE Conveyor Series



No. 5

Selection and

by Howard S. Sayre, Manager, General

What You Can Handle By Air

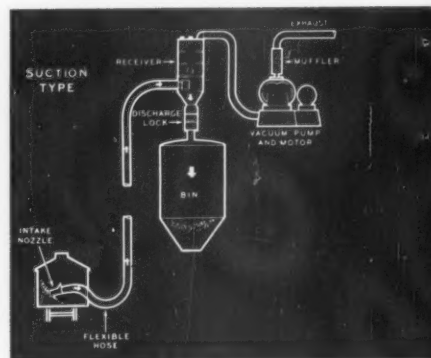
Activated carbon	Cyanamid (pulverized)	Plaster of Paris
Alfalfa meal	Detergent powders	Polyethylene pellets
Alkali cyanides	Dextrin	Polymers
Alum	Dolomite (crushed)	Quartz sand
Alumina (calcined)	Eggs (dried)	Reclaimed rubber
Aluminum granules	Feed ingredients	Red lead
Aluminum hydrate	Feeds, soft	Resin (synthetic)
Ammonium sulphate	Feldspar (pulverized)	Rice
Arsenic	Ferrous sulphate	Rice meal
Arsenic compounds	Fertilizer	Rubber pellets
Asbestos dust	Fish scraps	Rye
Ashes	Flake oats	Salt
Asphalt filler dust	Flax seed	Salt cake
Barley malt	Flour	Sand
Barytes	Flue dust	Sawdust
Bauxite	Fluorspar	Silex
Bentonite	Fly ash	Silica (pulverized)
Blood (dried)	Foundry sand	Soap chips
Bonding clays	Fuller's earth	Soap flakes
Bone meal	Gilsonite	Soap powders
Borax	Gluten meal	Soda ash
Bran	Grains	Sodium bicarbonate
Calcium carbonate	Graphite ore	Sodium bisulphate
Calcium lactate	Grits	Sodium phosphates
Calcium molybdate	Gypsum	Sodium sulphate
Calcium phosphates	"Hogged" rubber	Sodium sulphite
Carbon black	Hops	Sodium tetra phosphate
Catalysts, petroleum	Iron oxide	Soy beans
Cellulose acetate	Iron salts	Soy meal
Cement (Portland)	Kaolin	Starch
Cereals	Lead slugs	Stucco (hydrocol)
Chalk	Lime (hydrated)	Sugar
Charcoal	Lime (pebble)	Steel chips
Clay (dried)	Litharge	Talc
Coal	Magnesite	Tankage (fertilizer)
Coating materials	Manganese oxide	Titanium oxide
Cocoa beans	Meat scraps (dried)	Vanadium ore
Cocoa tailings	Middlings	Vinyl chloride
Coffee beans, green	Milk (dried)	Volcanic ash
Coke dust	Mineral potash	(pulverized)
Co-polymers	Mineral protein	Wheat flakes
Copper calcines	Mineral wool	White lead
Copra	Nylon pellets	Wood chips
Cork (granulated)	Oats	Wood flour
Corn	Paint pigments	Zinc calcines
Corn flakes (brewers)	Permalloy	Zinc oxide
Cotton seeds	Phenolic resins	Zinc sulphide
Cracklings	Phosphate rock	

PNEUMATIC HANDLING is automatic handling. A single unit can handle up to 300 tons an hour, but generally you'll find that if you move as little as one car-load a week of a free flowing material you can save money with pneumatic handling.

By switching to pneumatic conveying you can expect increased productivity, time saving, and lower labor costs. By conveying with air, you save the difference between material sold in bulk and material sold in bags. And don't forget you can lose up to 2 percent of bagged material, because some sticks to the emptied bags.

You can't lose or spill material

Pneumatic



SUCTION types are for moving material from many points to one.

100 Years of Pneumatic Conveying

It is a great tribute to the early leaders in pneumatic conveying that much of their basic ideas are still used in the design of equipment. For more than 100 years, air has been used to unload ships. For many years pneumatic conveyor development was closely associated with ships, barge, and rail transportation.

Growth of pneumatic conveying has

been spurred by technical advances and changed economic factors. Particularly important has been the relative stability of power costs compared to the steep climb in labor costs.

Along with the increase in popularity and applications of pneumatic conveying, systems have become more complicated and more companies are supplying the equipment.

In some industries pneumatic conveying has been used so extensively that their engineers are sometimes able to build their own systems from components. But generally pneumatic conveyor manufacturers recommend that they be given undivided responsibility for the entire system—design, supply, equip, test, and tune up—since much of the knowledge is empirical.

Use of Pneumatic Conveyors

Conveying Division, Fuller Co.

in a pneumatic conveyor. And it's especially advantageous in moving dusty material. You can convey material anywhere a pipeline can run—under ground, under water, straight up, over long distances, and to any number of delivery points. Single systems are conveying to as many as 48 bins. And the average system can be operated by one man.

Pneumatic equipment best handles material that's dry and granular, pulverized, crushed, pelletized, or otherwise refined. High pressure systems can handle metal parts 2 inches long and 4 inches in diameter. They also move wood chips. With high pressure, you

can move material with densities from 75 to 250 pounds per cu ft.

More Advantages

An airtight pneumatic system keeps material free from contamination, and reduces the danger of fire and explosion. It's also self-cleaning.

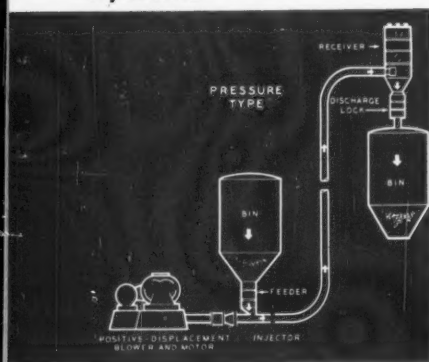
Pneumatic systems are flexible, easily adapted to old plants or new designs. Pneumatic systems save space, because they don't need extra machinery to change the direction of flow or require space consuming supporting struc-

tures for heavy parts. It's easy and economical to add or change or adapt pneumatic lines to suit changes in volume, operating procedures, or plant layout.

Costs

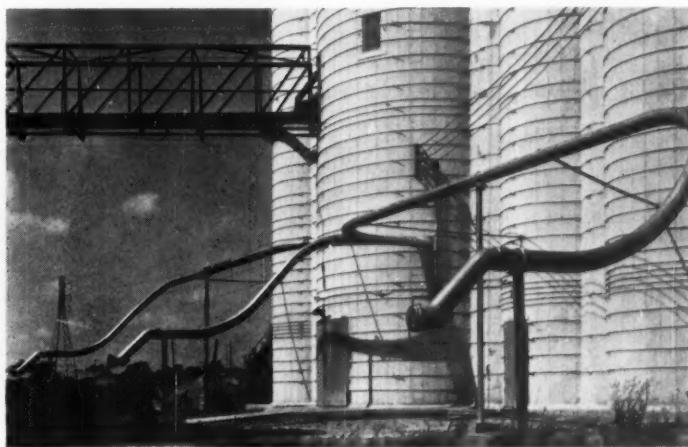
Relative costs of investment, power, and mechanical maintenance—factors that sometimes favor other systems when distribution lines are short and simple—more and more favor pneumatic systems as the distribution system increases in length and intricacy. The need to move material ver-

Systems



Dracoo Div., Fuller Co.

PRESSURE types move material at few points to many destinations.



Spencer Turbine Co.

PIPING SYSTEM has multiple valve locations for hose connections used for unloading freight cars and conveying material to storage tanks.

AIR carries polyethylene granules to aluminum tanks (2,000 pounds capacity) above production floor. Pipes then move the granules by gravity to the extrusion machines.

Pneumatic Conveyors



Dracoco Div., Fuller Co.

tically also favors pneumatic systems because they need no special equipment to change direction. All you need for a long or complex pneumatic conveyor—beyond that needed for a small, compact, and simple one—is additional piping, valves, and motor and compressor capacity. Other conveyor systems require more repair and replacement as the system becomes more extensive and complicated. And they often need expensive machinery to change the direction of flow or to divert the flow to several points.

Where To Use

With pneumatic conveying you can bridge the distance between any two successive steps in the flow of material. These include conveying:

1. Raw material from carrier to storage or direct to the process. Many ships, barges, freight cars, and trucks have open air-activated conveyors to speed unloading.
2. Raw material from storage to process.
3. Material in process from one station to the next.
4. Finished product from process to product storage or direct to loading facilities.
5. Finished product from product storage to loading facilities.
6. Finished product from load-

ing facilities to carrier.

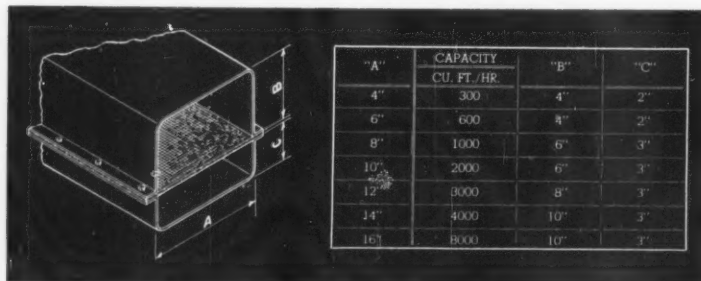
Basic Systems

There are three pneumatic systems: low, medium, and high pressure. Medium pressure is the simplest and best known. Basically, it includes a feeder, conveying line, and blower. It's intended for moving heavy loads of material. Its air-to-material ratio is between 0.2 and 5 cubic feet of air per pound of material and it operates up to 18 psi. Positive pressure is usually used in this type of system, but a combination of positive and negative pressures, with a collector operating between the two stages is not uncommon. An air-lock feeder and blower are required, and a filter is usually

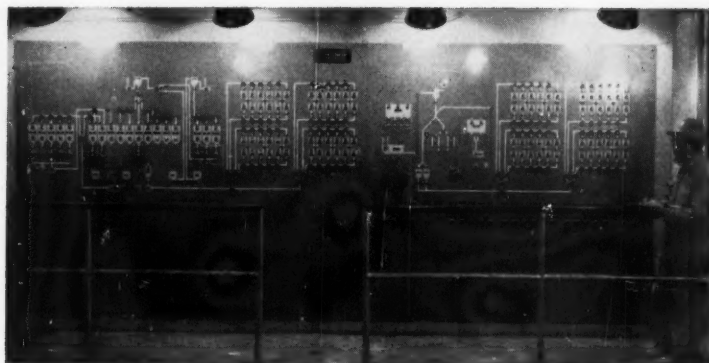
necessary unless the air (or other medium) is circulated in a closed system.

Low pressure systems often operate at 0.5 psi and require a low material-to-air ratio by weight. These systems are usually used for dust collecting—sometimes for light duty, low capacity conveying circuits. An ordinary fan propels the conveying air.

High pressure systems run at pressures up to 125 psi. They usually need from 0.2 to 3.0 cubic feet of air per pound of material conveyed. They usually use air compressors and receivers. High pressure is especially suitable for conveying material of varying particle size. And it's most eco-



IN THE AIR-ACTIVATED GRAVITY CONVEYOR air flowing through the bottom channel enters the upper chamber through a porous divider and fluidizes the material in the top channel so that it flows by gravity.



Fuller Co.

THIS CONTROL PANEL regulates the unloading, storing, and transfer to process of all additives used in the processing of iron or pellets from taconite ore at the largest taconite pelletizing plant in the Mesabi range.

nomical when moving material over very long distances (more than 2000 feet).

Elements of a System

All pneumatic systems have an air supply, material feeder, and conveying lines. Extra equipment includes valves to regulate the flow of material to various points, indicators, controls, and filters.

Air supply—A pressure pneumatic system usually requires from 0.2 to 5.0 cubic feet of air per pound of material moved. The exact amount depends on the material and the length and complexity of the line.

You can use a compressor or a blower to supply positive air pressure. Exhaust fans of positive displacement exhausters create negative propulsive force or vacuums.

Vacuum systems are often used to unload boxcars, ships, barges, and other bulk carriers. They have proved advantageous in handling a wide range of materials such as grains, chemicals and wheat flour. Air velocity is usually between 3,500 and 6,000 fpm. It usually takes between 0.6 and 8 cubic feet of air to move a pound of material.

For some applications a combination of positive and negative pressure conveying is best. For example, you can pull a material directly through a fan that induces a vacuum on the intake side and builds up pressure on the side to which material is blown. Common applications are systems that collect material from many points and deliver it to many points and (Continued on page 130)



The Brady Conveyors Corp.

PIPELINE method is economical when coal must be moved over long distances from car to boiler.



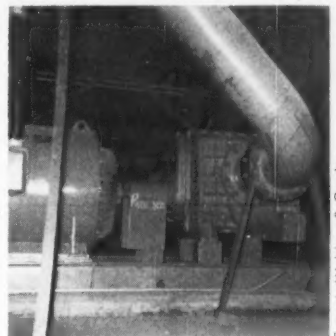
Fuller Co.

ONE MAN outside the building controls twin pneumatic lines that unload 15 tons in less than an hour.



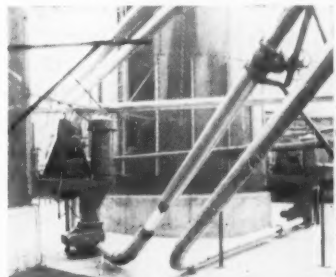
ACH Industries, Inc.

COVERED hopper cars can be unloaded pneumatically or by gravity. In seconds one man hooks it up. No tools are needed for job.



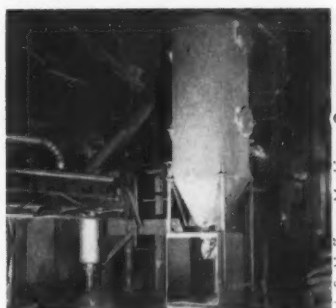
Sprout, Waldron & Co. Inc.

BLOWER assembly provides air to pick up 9,000 cubic feet of wood chips an hour, moves them to collector 400 ft away and 80 ft up.



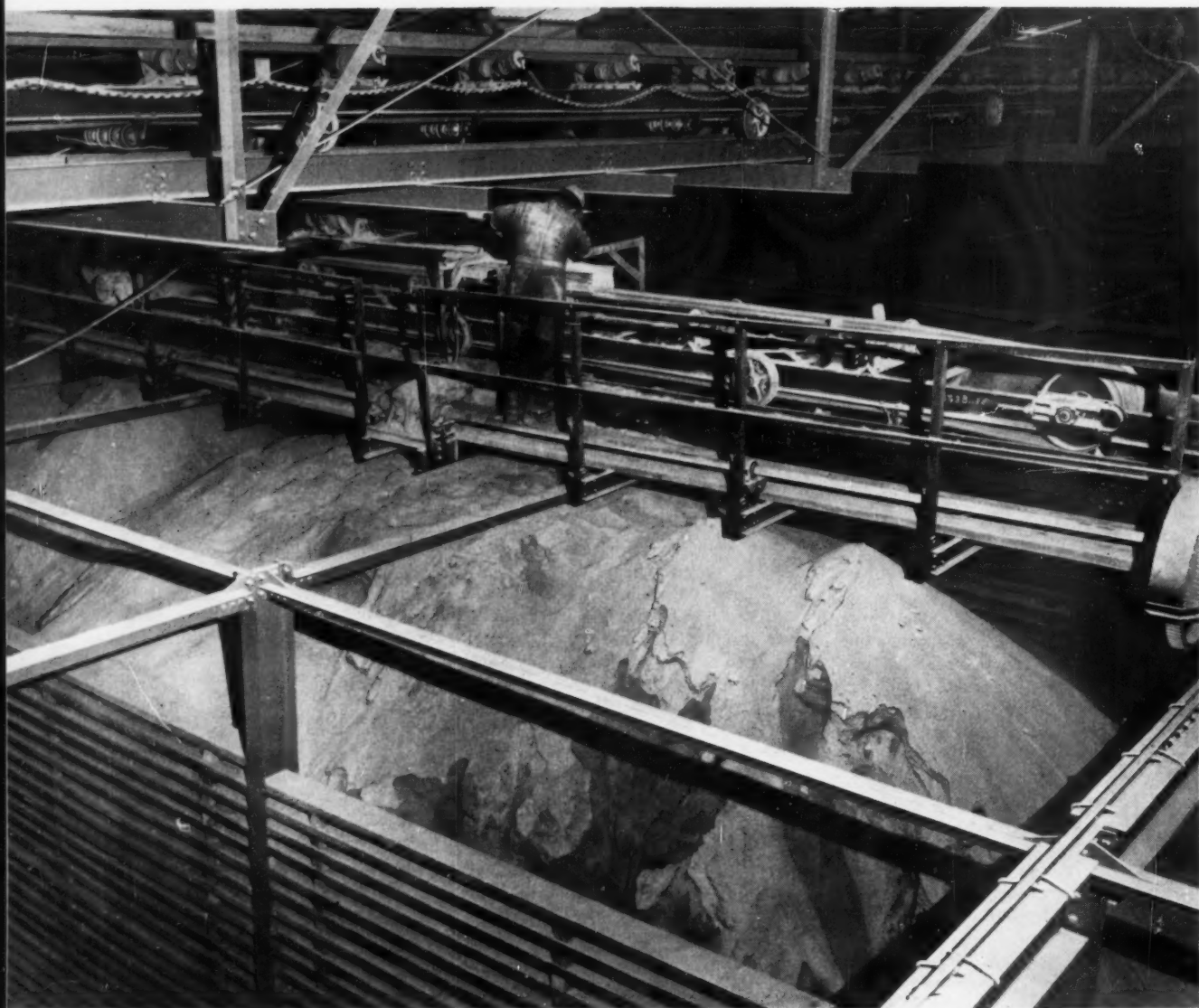
Sprout, Waldron & Co. Inc.

SYSTEM automatically moves flour 600 to 700 feet as needed to implant used bins. The system's capacity is 6,000 pounds an hour.



U. S. Hoffman Machinery Corp.

SEPARATOR removes dry sand from vacuum system using a rotary-positive displacement blower.



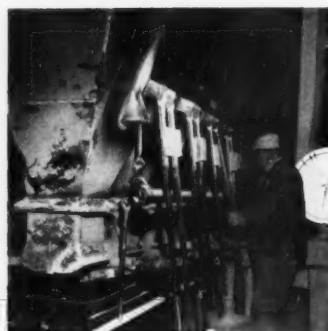
BELT CONVEYOR (32-foot shuttle type) on the traveling bridge crane distributes finished fertilizer to the proper storage bins for each grade.



FORK LIFT TRUCKS are used to move pallets of bagged fertilizer.



TRACTOR SHOVELS handle bulk material in final product storage.



SCALES under storage hoppers weigh material going to conveyor.

For convenience of customers, for high production and automatic handling, and to eliminate manual labor, try to . . .

Plan Buildings for Handling

WHEN you design a building, design it for material handling. Using this approach Eastern States Farmers Exchange has built a new plant which can produce up to 30,000 tons of fertilizer a year in a plant only 300 x 145 feet.

The plant makes liberal use of belt conveyors and bucket lift elevators to move material through processing. Tractor-shovels handle finished fertilizer in bulk. Fork lifts are used with pallets of bagged material.

From the early design stages to the finish of the building and the installation of machinery, efficient material handling was a prime consideration. Luria Engineering Company, of New York and Bethlehem, Pa., designed, supplied, and built the rigid frame structure.

Designed for the Customer

The convenience of the farmer-customer was the first consideration in designing the structure. A long shipping platform, under canopy, runs the 145-foot length of the building, next to the office. The office is connected to the loading dock by a short covered walkway. The farmer can come in with his own truck, immediately take bulk delivery, save freight, and get a discount for tonnage. Rail shipments are made from covered spur tracks along one side of the plant.

Raw materials are received in hopper cars on the same siding. A lean-to covers eight cars at a time.

The raw materials are unloaded and handled auto-

matically. The hopper cars discharge their contents into chutes between the rails. Underground, a horizontal belt conveyor moves material 40 feet through a tunnel to a pit below the production area. From there it is lifted by vertical bucket elevators to a storage area 55 feet above. A shuttle and reversible conveyor then moves the material along a 48-foot route to any one of the eight storage hoppers (each holding 20 tons) where the material is held until needed for processing.

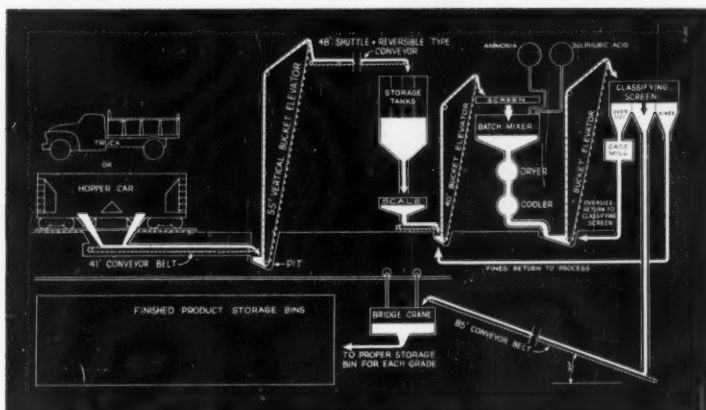
Automatic handling of ingredients plays a major role in efficient production at the plant. It speeds output by eliminating tedious manual labor. Belt conveyors, controlled by pushbutton, move material at 200 fpm. The conveyors have antifriction bearings, guide rolls, 18 inch belts, and rubber idlers. Fertilizers or their ingredients will not stick to the idlers.

Handling in Production

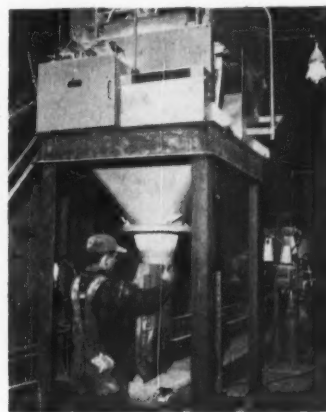
Mixing is partially batch and partially a continuous system. The flow sequence starts with the selection of the dry raw materials from storage. They weigh specified amounts on scales under the storage hoppers, then discharge to a conveyor belt for transfer to a bucket elevator that lifts the batch 40 feet and then dumps it onto a vibrating screen. The screened material flows into one of two 50 cubic batch mixers.

One unit accepts and mixes material while the

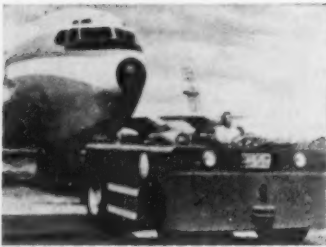
(Continued on page 98)



PATH of fertilizer from raw material receiving through processing equipment to finished product storage bins is shown here. Plant is 300 x 145 ft.



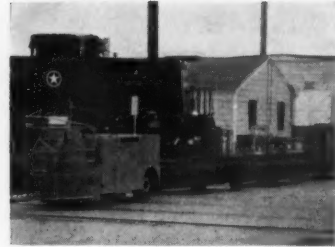
AUTOMATIC PACKERS fill paper bags with 80 lb of fertilizer.



Heavy planes are easily towed. Same tractor can spot freight cars.



ELECTRIC rider-walkie tractor is shown in a typical towing job.



CONTROLLED material movement above is by electronic guidance.

It's go-go-go from job-to-job for . . .

The Never Idle Tractor

Systematize your material movement with a tractor train. Fit it to your production schedule with a planned route. It can help save you money.

ALTHOUGH towing tractors are among the oldest of today's material handling methods, they are still among the most difficult to select. That's because they come in a wide variety of types, and because there are many factors to consider in determining the correct tractor size.

Proponents of the tractor, and

its complement, the trailer, claim that it is one of the great money savers in the industrial vehicle group. One reason they point out is that the motive unit is separate from the burden-carrying vehicles. You use your power for PULLING, not CARRYING. Furthermore, the tractor can work continuously with more than one

train. It never needs to stand idle, while being loaded or unloaded.

Major operating advantages are:

- Loads are always on wheels and readily movable by hand for short distances.
- The train is not confined to any fixed path. It can go anywhere that the movement necessitates.
- Trailers can be exactly suited to the material to be moved (side dump bodies for bulk material, box bodies for small parts, low dollies for barrels, platform trucks for general commodities.)
- Material movement can be systematized. It can be tied into production schedules by planning regular routes, dispatching trains at stated intervals, and centralizing control.

When To Use a Tractor:

There are times you shouldn't use a tractor. Industry has pretty well proved that to move a large volume of goods at a fairly constant pace between a limited number of points it's most econo-



HEAVY DUTY tractor shown hauls from 5 to 7 loaded trailers each trip. The trailers are loaded with bulky goods as furniture, appliances, rugs.



HEAVY ROLLS of carpet go up a steep ramp via trailer-tractor.



ELECTRIC tractor above hauls up to 12 loaded trailers at a time.



OPERATOR wears transmitter on his belt in remote control system.

mical to use some type of conveyor.

Consider a tractor when you must move: (a) Many different products to one or many points; (b) One product in high volume, but infrequently; (c) One product between several buildings; (d) A low-production item; (e) Powered vehicles short distances cheaper than they can be flown or driven (aircraft, locomotives, etc.); (f) When the distance is greater than 150 to 300 feet. This is generally considered maximum distance for fork truck transporting; (g) For order picking operations.

Today's models are designed for heavy haulage in close quarters. They have ample power to push or pull heavy loads on industrial trailers. They're built for safe operation on steep grades. Engineers have designed them simple and rugged, and have kept in mind the need for easy inspection and maintenance. They haven't forgotten the operator either. All controls are convenient, and his position is made comfortable.

Tractor trailers come with four kinds of power: gasoline, LPG, electric, and diesel. Types of control are the stand-up, rider, and the driverless.

Travel speeds for electric tractors range from 3 to 6 mph. Many can be operated as walkies or rider types, depending upon the position of the control handle. Two popular driverless tractors controls are the magnetic and optical.

The magnetic system provides positive guidance of the tractor

through a sensing device which follows the magnetic field surrounding the guide wire. The tractor-trailer train or truck moves through an area following a magnetic guide wire. It's embedded in a shallow slot in the floor.

The optical system follows a painted line or colored tape on the floor. Almost as versatile as the magnetic system in most functions, it has its application especially where frequent changes in guide paths are necessary. Where other vehicles cross or run over the line, or where dirt is a problem, line maintenance is necessary.

Driverless tractors will follow a planned route, balanced to the material flow laid out by engineers. They will move steadily and precisely on each trip down the aisles, around corners, through congested areas. They stop only at selected stations. These driverless tractors have a number of safety features to assure hazard-free operation. Guidance is so accurate that a tractor will not deviate from its path by

(Continued on page 126)



PASSENGERS can not wander on a plant tour via trackless train.



LOW LIFT pallet truck is hauled by tow tractor from an order line.



SIX LOADED dollies are pulled by a fork truck carrying another load. This method cut handling costs 50% and gave a 300% increase in volume.

COVER STORY

Handling With Hoists



SCALE is used with an electric hoist to weigh bundles of rods as they are lifted from railroad car.

ALL HOISTS have one basic function: to move loads vertically. Aside from this common purpose, each hoist model must be regarded in relation to a specific job. One hoist's strength is another's weakness. You have to consider every factor that will affect a hoist's performance before you make a choice.

As with many other types of material handling equipment, the purchase price of a hoist is only part of its real cost to you. (See *How Important Is Price?* MHE, August 1959.) The cost of operating the hoist, the cost of man-hours saved or lost by its use, the cost of maintenance, are part of your investment. How much you get back will be determined by how well you follow these rules for selecting the right hoist for the job:

1. Base your hoist capacity on the heaviest load you'll have to lift.
2. Analyze your power supply before installing the hoist.
3. How much work will the hoist have to do?
4. How high will the hoist have to lift?
5. What hoisting speed does your operation require?
6. What kind of mounting will the hoist need?
7. How far will the hoist have to travel? How often?
8. Will you be operating the hoist under hazardous conditions?

Let's look at these selection factors individually:

1. *Base your hoist capacity on the heaviest load you'll have to lift.*

This rule is regarded as one of the most important by hoist experts. Here's why: suppose your normal lift is 3000 pounds, with an occasional 5000 pound lift needed. You'll save a few dollars by buying a 3000 pound capacity hoist. BUT you're overloading the hoist, making it breakdown prone, and shortening its life. The economical thing to do, in the long run, is buy the 5000 pound capacity hoist. A point to remember: add the weight of hoist attachments — grabs, grapples, spreader bars, etc. — to the load weight when figuring capacity.

2. *Analyze your power supply before installing the hoist.*

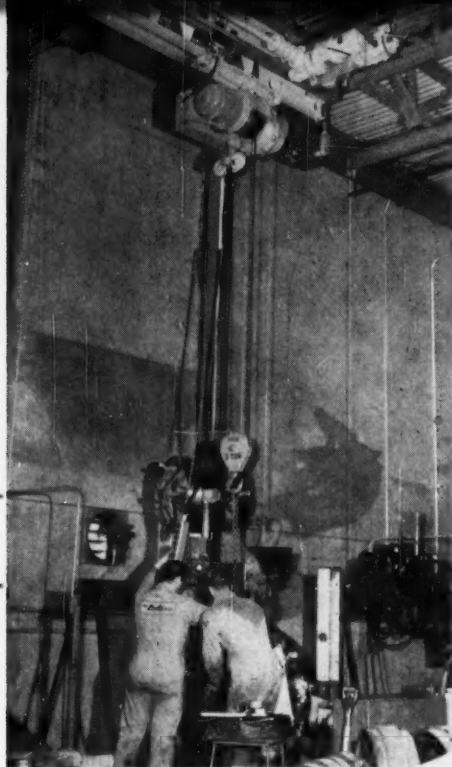
You have to study the current characteristics of your plant before making a hoist installation. You can get a hoist to suit any type of current; but make sure it is used on that current only. Some models, however, are offered with dual voltage motors. These can be re-connected within the motor junction box to accommodate a change of voltage when the hoist is moved. Current is applied to hoists in various ways. A stationary mounted unit is wired directly. A hoist that has a short distance to travel (jib mounted, for example) might use a tag line—a flexible rubber covered cable that travels with it. In a long system (150-200 feet), a hoist might carry current through a bare wire along the track, through a figure-8 or T-bar, or some covered safety conductor. Other hoists have built-in reels that play out and draw in the power cable. Wheel type or slider shoe collectors pick up the power for the trolley on most electric hoists.

If you have single phase current and use a lightweight electric hoist, you must check your line voltage, not only at the junction box but also at the hoist location. Any voltage drop greater than 10 percent on a single phase installation will slow up hoist speed, and perhaps burn out the motor. You must make a voltage check with all motors, under load, which would be operating at the same time. This would include the hoist motor.

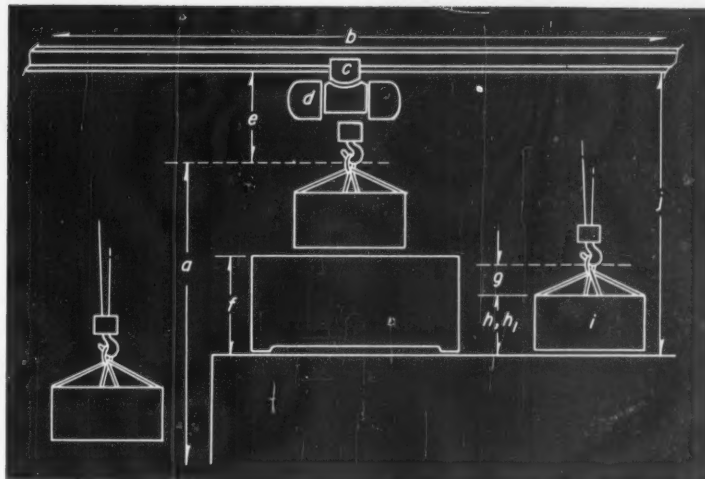
3. *How much work will the hoist have to do?*

You must analyze the hoist's duty cycle (the number of minutes per hour it can be expected to run at full load). Hoist motors are usually 15-minute or 30-minute type. A 15-minute motor is one in which the temperature rise does not exceed 55 degrees C. above the surrounding atmosphere after
(Continued on page 76)

What is the trend in hoists?
YOU can give us the answer.
See page 139.



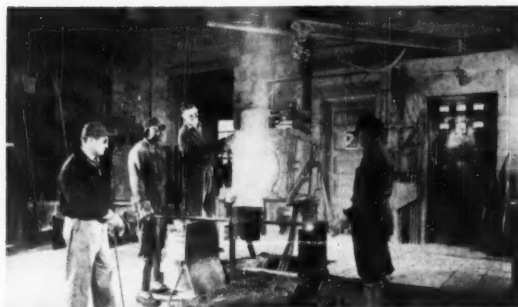
PUSH-BUTTON control guides the lifting of heavy tractor machinery.



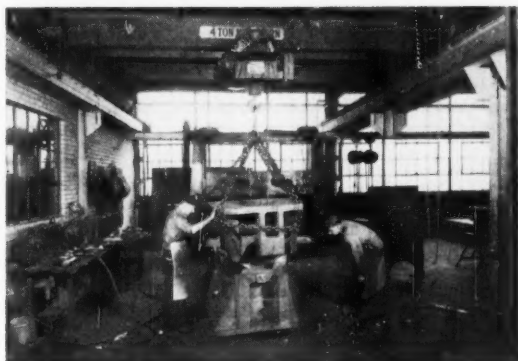
Hoist Selection Factors

- a. Maximum lift which will be required.
- b. Horizontal travel.
- c. Type of suspension.
- d. Light duty vs. heavy duty motor.
- e. Available headroom.
- f. Height of highest existing obstruction.

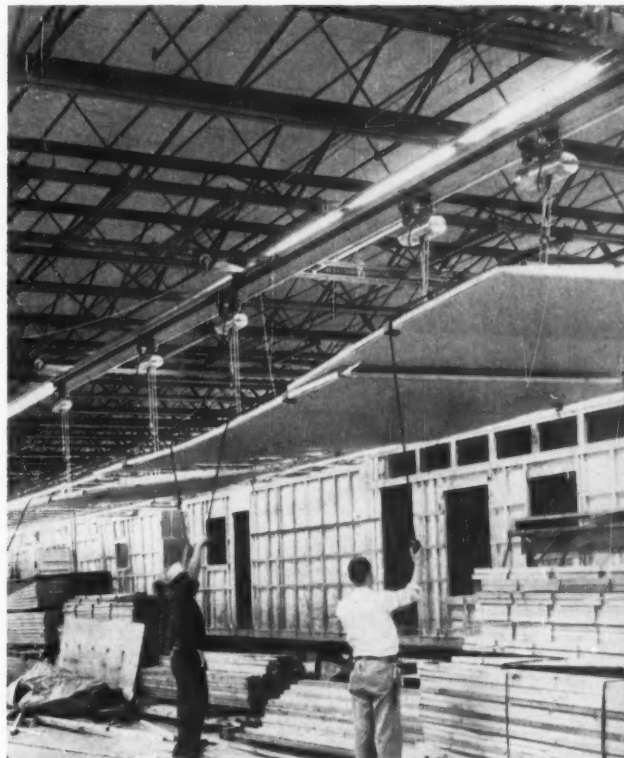
- g. Vertical space required for spring or grab.
- h. Height of largest load to be lifted.
- h₁. Height of smallest load to be lifted.
- i. Heaviest weight to be lifted.
- j. Distance from bottom of beam or mounting point to floor or operating level.



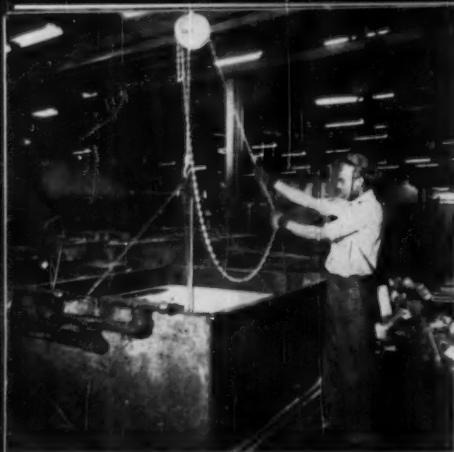
AIR HOIST with 1/2 ton capacity handles hot metal. Hoist is mounted on beam that swings away from wall.



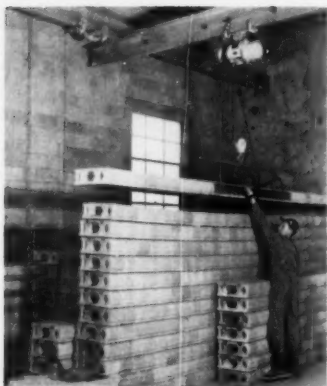
SLING CHAIN helps electric hoist move and spot heavy dies. Hand chain moves hoist along the track.



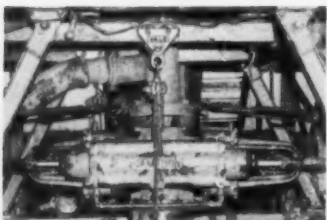
ELECTRIC CHAIN HOISTS are used in unison to handle floor section for a mobile home manufacturer.



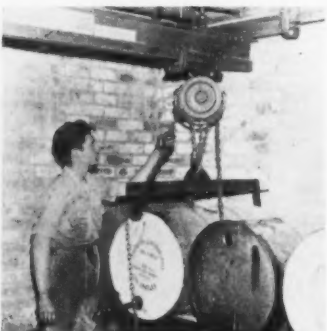
CHAIN HOIST operates over oil bath. Lift speed is not required.



MONORAIL carries light capacity electric hoist for handling forms.



RATCHET HOIST is used in oil well drilling to stop blow-outs.



HAND CHAIN HOIST on monorail has an attachment for drums.



Handling With Hoists

a 15-minute run under full load. A 30-minute motor is one which has a temperature rise of less than 55 degrees C. after a 30-minute run under full load.

If you use your hoist for intermittent duty only (a few lifts a day), you can probably use a 15-minute motor. But if you have near-continuous operation with near-capacity load, you'll need a 30-minute motor to get efficiency and long life from your hoist.

The number, or frequency, of starts of the hoist motor during average operation is an important factor in selection. Because hoist motors are high starting torque types, starting will cause greater heat than running under full load. A good rule to follow: if you require more than three starts a minute, consult a hoist engineer before buying.

The hoist engineer will also study such factors as the presence of high ambient heat or extreme cold in continuous cycle operations. He might recommend controls with time delays or thermal overload delays with proper insulation to counteract destructive motor heating.

If you have an electric hoist to be used at extremely slow speeds, and if you have ample headroom, you can obtain the slow speed by reeving. You could, for example, convert a two-part, single-reeved, one-ton hoist with 20-foot lift and a 20 fpm hook speed into a two-ton hoist with a 10 fpm hook speed. Result would be a four-part, single-reeved, 10 foot lift hoist with a top idler sheave and a double sheave bottom block.

Frequency of lift is a factor in deciding between an electric and a hand hoist. It is generally recommended that you use an electric hoist if you have more than four lifts an hour. If you have less, a hand hoist would be more

economical, especially if you have to inch the loads.

4. How high will the hoist have to lift?

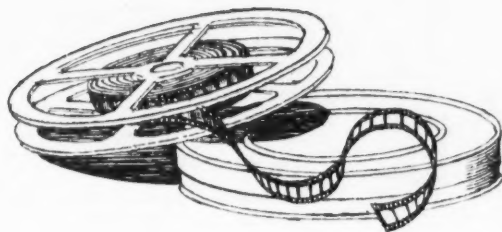
Although hoists are available in various lifts, most manufacturers have standardized on 8 to 10 feet for hand hoists, 10 to 12 feet for light duty electric hoists, and over 18 feet for heavy duty hoists. You can get unlimited lifts for special applications. The amount of lift you need depends on the vertical dimensions involved in the operation. And this height depends on several factors:

- a. Height of the bottom of the beam or mounting point of the hoist above the floor or operating level.
- b. Height of the largest load which the hoist will be expected to handle.
- c. Height of the smallest load which the hoist will be expected to handle.
- d. Vertical space which will be required for a suitable sling or grab to handle loads.
- e. Height of obstructions over which loads must be moved.
- f. Available headroom (the vertical distance between the bottom of the beam and the saddle of the hook when it is in its uppermost position).
- g. Maximum lift which will be required. This takes into consideration factors such as pits into which loads must be deposited, etc.

5. What hoisting speed does your operation require?

Continuous, production line hoisting generally requires a higher speed hoist than an intermittent application. What types of speeds are available? You can get a single speed hoist powered by a squirrel cage motor. Since this

(Continued on page 134)



Material Handling Movies

MATERIAL HANDLING ENGINEERING'S list of informative and educational films offered by manufacturers of handling equipment.

CONVEYORS AND ACCESSORIES

"Standardization For The Long Haul"

(22 minutes, 16mm, color, sound)
Covers permanent belt conveyor manufacture and emphasizes standardization of components and their application to large and complex conveying systems.

Barber-Greene Co.
400 N. Highland Ave.
Aurora, Ill.

"Convey-All Corporation"

(30 minutes, 16mm, color, sound) Gives brief history of company, shows buildings, and facilities. Also shows some installations. Of particular interest is a steel sheet handling conveyor and a green tire loader conveyor.

Convey-All Corporation
471 N. Main Street
Mansfield, Ohio

"Preparation Makes The Product"

(19 minutes, 16mm, color, sound)
Shows push button coal cleaning in one of the largest, highly automated plants. Ninety per cent of the operations of the plant are controlled by one man.

Link-Belt Company
Prudential Plaza
Chicago 1, Illinois

"Zig-Zag Continuous Power Conveyors"

(40 minutes, 16mm, black and white, sound) Applications of the company's zig-zag conveyor in several industries.

Richards-Wilcox Mfg. Co.
Third and Lake Streets
Aurora, Illinois

"Foam Rubber"

(29 minutes, 16mm, color, sound)
Shows the complete automatic processing of foam rubber products, from the plantation to the finished packaged goods in the warehouse.

Mechanical Handling Systems, Inc.
4600 Nancy Avenue
Detroit 12, Michigan

"Automation Unlimited"

(30 minutes, 16mm, black and white, sound) Shows automatic transfer equipment carrying crank shafts to and from machinery operations.

Jervis B. Webb Company
8951 Alpine Avenue
Detroit 4, Michigan

"The Way Out"

(27 minutes, 16mm, color, sound) An instructive film on the application of belt conveyors in underground coal mine haulage.

The Goodyear Tire & Rubber Co.
1144 E. Market Street
Akron 16, Ohio

"Automation Today"

(36 minutes, 16mm, black and white, sound) Presents underlying reasons for and advantages of automation in production and processing.

Mechanical Handling Systems, Inc.
4600 Nancy Avenue
Detroit 12, Michigan

"Handling Materials In The Steel Industry"

(25 minutes, 16mm, color sound) Material handling equipment as it is used for conveying iron ore, coal and limestone at mine and mill, with methods of handling steel coils through processing to final shipment.

Link-Belt Company
Prudential Plaza
Chicago 1, Illinois

"Pacemakers For Industry"

(21 minutes, 16mm, black and white, sound) A general history of conveyors from early man to modern-day manufacturing.

Jervis B. Webb Company
8951 Alpine Avenue
Detroit 4, Michigan

"Conveyors Only Look Alike"

(23 minutes, 16mm, color sound) Shows long, short, light and heavy-duty portable belt conveyors handling various materials on many jobs.

Barber-Greene Co.
400 N. Highland Ave.
Aurora, Ill.



"Moving A Mountain Into A Lake"

(17 minutes, 16mm, color, sound) The design engineering, manufacture, installation, and operation of a two-mile conveyor system at the Great Salt Lake fill project.
Hewitt-Robins, Inc.
Robins Engineers Div.
666 Glenbrook Road
Stamford, Connecticut

"Belting The Burden"

(18 minutes, 16mm, color, sound) A case history of the planning and operation of a 3 mile belt conveyor system to transport and dump glacial overburden from a Mesabi Range open pit mine.
The Goodyear Tire & Rubber Co.
1144 E. Market Street
Akron 16, Ohio

"Open Letter"

(25 minutes, 16mm, black and white, sound) A basic approach to the true meaning of rubber conveyor belt specifications in terms of factory processing and technical controls.
The Goodyear Tire & Rubber Co.
1144 E. Market Street
Akron 16, Ohio

"Barrel Loader"

(9 minutes, 16mm, color) A pallet loader film, dealing with various industries, showing company equipment in action.
Food Machinery And Chemical Corp.
Packing Equipment Division
P.O. Box 552
Riverside, California

"Straight Loader"

(12 minutes, 16mm, color) This pallet loader film shows operation of company equipment in various industries.
Food Machinery And Chemical Corp.
Packing Equipment Division
P.O. Box 552
Riverside, California

"Conveyorizing A Grocery Warehouse"

(27 minutes, 16mm, black and white, sound) A typical operation in detail.
The Rapids-Standard Company, Inc.
144 Trowbridge Street, N.W.
Grand Rapids 2, Michigan

"How To Cut Your Expansion Costs In Half"

(12 minutes, 16mm, black and white, sound) Describes the Alden Work Center system, including conveyors, and work transfer devices.
Alden Systems Company
Alden Research Center
Westboro, Massachusetts

"Material Handling Conveying"

(8 or 16mm, color, or black and white, silent) Story of the Corrigan bulk sugar handling systems.
J. C. Corrigan Co., Inc.
41 Norwood Street
Boston 22, Mass.

"Saginaw Steering Gear"

(30 minutes, 16mm, black and white, sound) Power and free carrying small parts. Shows lift sections, automatic loading, and diagrammatic layout sketches.
Jervis B. Webb Company
8951 Alpine Avenue
Detroit 4, Michigan

"The Way Over The Mountain"

(29 minutes, 16mm, color, sound) The story how belt conveyors accomplish a major earth haulage job over rugged terrain in the construction of a dam.
The Goodyear Tire & Rubber Co.
1144 E. Market Street
Akron 16, Ohio

"Handling The Harvest"

(14 minutes, 16mm, color, sound) Tells how the company's two boxcar unloaders are used to unload free-flowing bulk materials.
Link-Belt Company
Prudential Plaza
Chicago 1, Illinois

"What's The Difference?"

(26 minutes, 16mm, color, sound) Belt conveyors handling various materials on many jobs. Simple and complex conveyor layouts are used.
Barber-Greene Co.
400 N. Highland Ave.
Aurora, Ill.

"St. Regis Paper Company"

(17 minutes, 16mm, black and white, sound) Shows huge rolls of paper being automatically transferred through banding and weighing processes to storage.
Jervis B. Webb Company
8951 Alpine Avenue
Detroit 4, Michigan

"Power Curve Bag Handling"

(18 minutes, 16mm, color, sound) Shows high speed boxcar and truck loading with a minimum of labor . . . how bag flattening saves valuable space, and how bags are elevated or lowered in a continuous flow at controlled speeds at any angle from horizontal to vertical.
Power-Curve Conveyor Co.
2185 South Jason Street
Denver 23, Colorado

"Foundry Flexibility"

(29 minutes, 16mm, color, sound) Shows the highly mechanized Link-Belt Ewart malleable iron foundry in Indianapolis. Five molding lines are shown using mechanical devices arranged to handle molds for special jobs.
Link-Belt Company
Prudential Plaza
Chicago 1, Illinois

"Pathway To Profits"

(15 minutes, 16mm, color, sound) Tells how Trukveyors, in-the-floor type conveying systems for moving four-wheel platform trucks, solve problems of handling merchandise shipments.
Link-Belt Company
Prudential Plaza
Chicago 1, Illinois

"Progress In Industrial Rubber"

(26 minutes, 16mm, color, sound) Shows how raw materials are used to produce quality rubber products through improved production facilities.
Thermoid Division
H. K. Porter Co., Inc.
Whitehead Road
Trenton 6, New Jersey

"Inter Locking Loader"

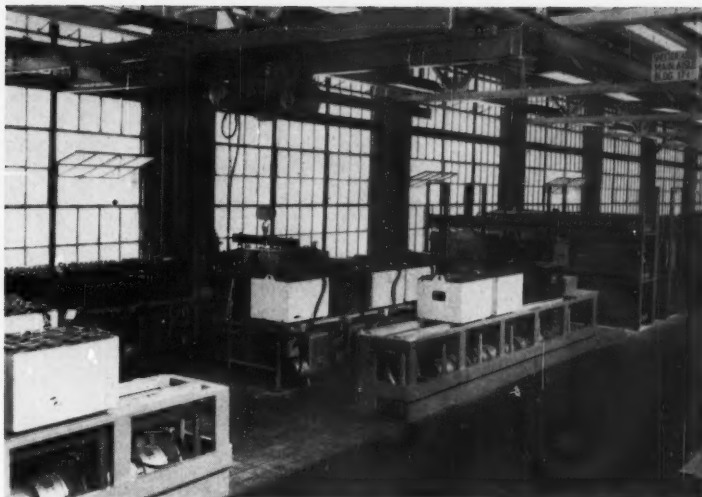
(15 minutes, 16mm, color) A pallet loader film. Company equipment is shown in operation in bottling operations, refinery operations.
Food Machinery And Chemical Corp.
Packing Equipment Division
P.O. Box 552
Riverside, California

"Banana Handling"

(40 minutes, 16 mm, black and white, sound) Modern methods of banana handling, from the freight car to the ripening rooms to the wholesaler.
Richards-Wilcox Mfg. Co.
Third and Lake Streets
Aurora, Illinois

(Continued on page 148)

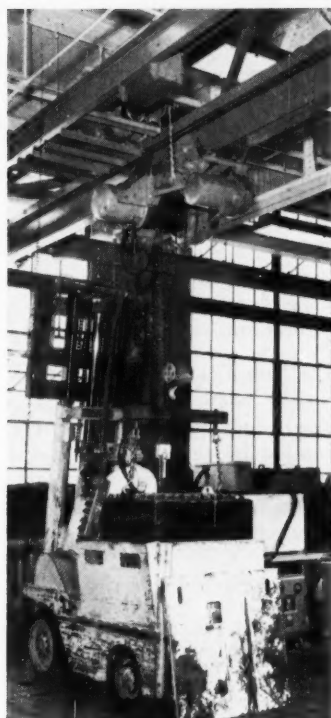
STORAGE RACKS (far right) hold the batteries when not in use. Rollers and a locking device are part of design for movement ease. Note position of overhead crane. Overall area view of the charging area shows good space utilization.



How we found . . .

More Space in the Charging Room

by Joseph Kelly, Western Electric Company



AN ELECTRIC hoist mounted on overhead bridge crane removes discharged battery for new one. The hoist covers charging area as well as repairs and cleaning. Variable hooks on the spreader bars permit wide handling range.

WITHOUT using more floor space, we increased our battery charging capacity. We also improved our battery maintenance and storage areas. The rearrangement gave us 38 parking stalls for power trucks. We had only 12 before.

Increased material handling schedules at our Kearny Works of Western Electric Co. demanded more floor space for trucks. It just wasn't available because production machinery carried a higher priority. So we had to improvise, use our ingenuity, even our air rights.

An open type bench now permits mounting the motor generator on the floor with the battery to be charged resting above it on top the bench. This gives us double use of floor space. Proper positioning of batteries on the bench prevents loose, tangled battery cables on the floor.

We exchange discharged batteries for charged ones by means of an overhead electric hoist mounted on a bridge crane. The spreader bar on the hoist is designed with variable hook spacing to permit a wide handling range. The hoist also covers the charging, battery cleaning, and

repair areas.

We make repairs in a separate area. A specially designed rack for storage of new or out-of-use batteries is the core. It is equipped with rollers for movement ease. A locking device prevents accidental removal.

Battery Cleaning

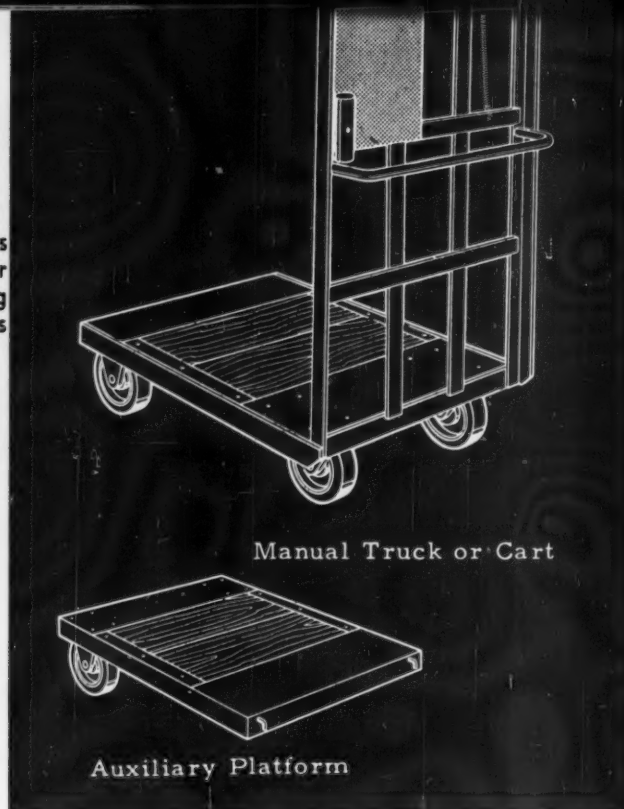
We clean batteries quickly and economically. Our pressure spray wash tank makes it a 5-minute job. By using double tanks, the operator can work continuously. As one battery is spray rinsed, he moves another.

We use individual single circuit chargers. They give us flexibility and protection against service interruption. We use a motor generator charger to get a full charging cycle.

We keep over 600 batteries in use, to run more than 60 industrial trucks. Some work several shifts. The Cable plant has the largest fleet of industrial power trucks on the Kearny track, which produces as much as 1200 tons of exchange area cable a week. The plant is entirely dependent upon them to maintain production schedules.

MATERIAL HANDLING ENGINEERING is glad to cooperate with the Caster and Floor Truck Manufacturers' Association in presenting these standards designed to help the user select four-wheel hand and tow line trucks.

Standards for Tow Line Trucks



THIS STANDARD establishes standards of design, materials, performance and testing. These recommendations of the manufacturers of the Caster and Floor Truck Manufacturers' Association (CFTMA) represent their pooled experiences and are to the best user advantage as recommended by the Operations Committee of the Regular Carriers' Conference.

1. BASIC TERMINOLOGY

1.1 Cart.

For the purpose of clarity and to

conform with the terminology adopted by the users of this equipment, in this standard "cart" means the non-tilt platform truck.

1.2 Tow Line Truck.

This term is used by CFTMA to distinguish between this type of platform truck and those covered by a separate platform truck standard.

1.3 Manual Cart.

This term applies to the tow line truck or cart when supplied for strictly manual pushing or with-

out the underfloor or overhead connections required for tow line operations.

1.4 Tow Line Cart.

This term covers the cart when equipped with the proper connections for attachment to underfloor or overhead conveyor systems.

1.5 Non-Tilt Platform Truck or Cart.

The non-tilt type of platform truck covered by this standard has a running gear consisting of two swivel casters at the rack end and

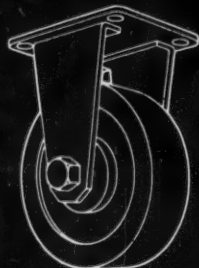
Recommended Standard Sizes and Dimensions of
Medium Heavy Duty Casters per CFTMA Standard CFT-CI-58

Wheel Diam. (Nom.)	Tread Width (Min.)	Swivel Radius (Max.)	Overall Height (Max.)	Mounting Plate Hole Spacings	Overall Size of Mounting Plate (approx.)	Mounting Bolt Diam.	Load Rating*		
							Molded on Demountable	Plastic Tread	Metal Tread
6 in.	2 in.	5 $\frac{5}{8}$ in.	8 in.	4 $\frac{1}{8}$ x 4 $\frac{1}{2}$ in.	5 x 5 $\frac{1}{2}$ in.	$\frac{3}{8}$ in.	410 lb	640 lb	850 lb
8	2	7 $\frac{1}{4}$	10	4 $\frac{1}{8}$ x 4 $\frac{1}{2}$ in.	5 x 5 $\frac{1}{2}$ in.	$\frac{3}{8}$ in.	500	675	1050

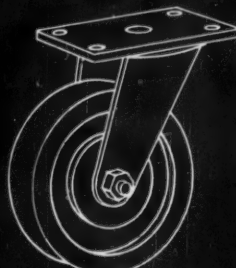
Note: Rigid casters have same height, plate size and mounting hole spacing as swivel casters.

*Load ratings are in keeping with wheel standards for sizes shown.

CASTER TYPES

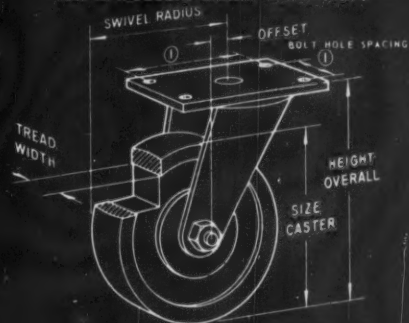


RIGID



SWIVEL

How to measure caster dimensions



WHEEL TYPES

Cushion Treads: For Floor and Load Protection and Quietness



Molded-On Rubber Wheel
(Cushion rubber tread bonded to metal core)



Metal Side Plate Wheel
(With demountable rubber or canvas cushion tire)

Hard Treads: (Non Metallic) For Floor Protection and Increased Load Capacity



Plastic Wheel Floor
Protective, shock resistant, spark proof. Resistant to certain chemicals

Metal Tread:



Metal Wheel
Ferrous and Non-Ferrous

two rigid casters at the opposite end placed so that all wheels are in contact with the floor at all times.

1.6 Auxiliary Platform.

Construction is identical to the cart except there is no rack nor rigid casters; there are swivel casters at only one end, at the opposite end are hooks or round pins to fit into pockets on the carts, thus forming an extension for handling long articles or packages. See Section 3.1 on page 124 for further description of auxiliary platforms.

2. SPECIFICATIONS

2.1 Size of Platform.

Sizes are 32 x 40 inches and 32 x 48 inches with longer lengths available in 6 inch multiples if required for handling bulky materials. Platform heights 8 inches (+ or - 1/8 inch) with casters having 6 inch diameter wheels or 10 inch (+ or - 1/8 inch) with casters having 8 inch diameter wheels.

2.2 Basic Frame and Deck.

2.2.1 Frame:

Inverted channel shaped end frame members of sufficient width to accommodate caster attachment are formed of 7 gauge or 3/16 inch plate steel with a minimum downward flange of 2 inch depth on the outside vertical flanges which become the cart ends. The flange on the channel at the front of the cart is turned back under or rounded to eliminate all sharp edges. The two end channels are joined together by welding in lengthwise steel members and a center lengthwise steel member. All three longitudinal members become supporting members for the wood decks installed between the two channel end frame members.

(Optional construction or material permitted providing that it will comply with the testing specified under Section 2.2.3 for deck and frame strength).

2.2.2 Decks:

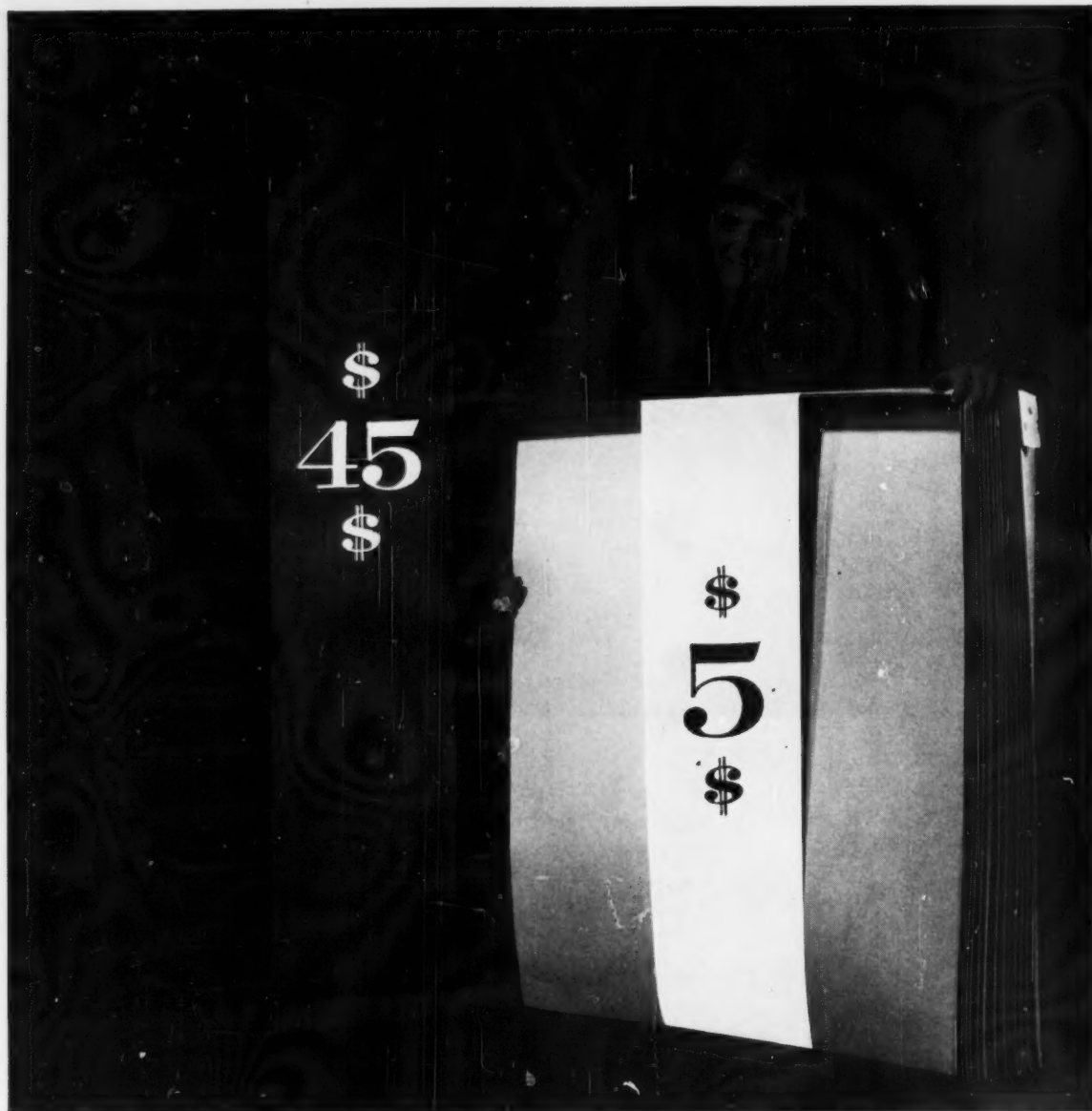
The center wood deck between the

end channels is made up of cross-wise platform boards of properly seasoned hardwood boards that are planed and finished to a thickness of not less than 1 3/16". These boards are held in place by steel flat or angle steel binding strips countersunk flush into the deck boards and attached to the outer supporting longitudinal frame members by through bolts or by self-tapping metal screws. The heads of the bolts or screws are countersunk into the steel binding and the complete deck section is flush with the surface of the end channels. Deck boards are dried to no less than 8 nor no more than 12 percent moisture content in accordance with Government Specifications.

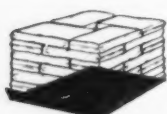
(Optional deck construction permissible providing that it is of equal strength and will meet the requirements of the following paragraph).

2.2.3 Frame and Deck Strength:

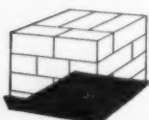
The frame and deck unit on a
(Continued on page 110)



Reduce pallet costs 90% with Mead fiberboard pallets!



Poke-Pak® for bags



Glide-Pak® for boxes

Mead expendable pallets do the same job as wooden pallets at only $\frac{1}{9}$ the cost! They easily hold the heaviest loads. And because they're quality-made of tough, hardwood fiberboard, you can use them again and again. Yet they cost so little they're truly expendable. Use Mead Glide-Pak for boxes and Poke-Pak for bags. They end the need for customer deposits . . . completely eliminate return headaches, freight credits and charge-backs. But get the facts for yourself.

Write today for free booklet.

Circle 122 on Reader Service Card for more information

MEAD
board

MEAD BOARD SALES, INC.
Sales Offices: Cincinnati, Ohio;
Lynchburg, Va.; Newark, N. J.;
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Boston, Massachusetts

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***PACKAGING
AND***

***SHIPPING
SECTION***

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Packaging and Shipping Idea of the Month	94



PREPARING carload of pipe for shipment, this worker squeezes a seal around heavy duty strap. Note the

hand tensioner just left of the sealer. The pipes are easy to unload and protected from damage in transit.

Facts About Steel Strapping

It's strong, inexpensive, and widely used, but many engineers don't know very much about it.

By Albert M. Joseph
Associate Editor

THERE ARE SEVEN main uses for steel strapping: to reinforce shipping containers; to bale compressible materials; to bundle loose items; to close containers; to palletize or unitize loads; to suspend, tie down, or support loads in interior packaging; and to tie down cargos for carload shipments.

Reinforcing shipping containers—Straps around fibre or wood boxes can boost their strength several times, help them withstand rough handling they otherwise couldn't take.

Tumbling tests have proved that one strap around most wood boxes makes them 20 percent stronger; 33 percent for two straps. That lets shippers save money by using thinner boxes. In most cases the straps are most effective when placed girthwise around

the package. A good rule of thumb for picking the right size strap: the total breaking strength of all straps should equal ten times the gross weight of the package.

Around corrugated boxes, straps reinforce much more than the small area they cover. They compress the corrugated board far beyond, adding strength to the entire package.

Baling—Waste paper, scrap metal, textiles, pulp, etc. in their loose forms take up expensive space, unnecessarily. And they're expensive to handle. Compressing them into bales then tying them with steel straps reduces their volume, cuts storage and shipping costs, makes handling cheaper and easier.

Bundling—One of strapping's most important jobs.

TENSILE STRENGTHS of various sizes of flat steel strapping

Width (inches)	Thickness (inches)							
	.010	.012	.015	.018	.020	.023	.028	.035
Strength (pounds)								
3/8	375	450	562	675	750	862		
1/2	500	600	750	900	1000	1150		
5/8	625	750	937	1125	1250	1437		
3/4	750	900	1125	1350	1500	1725	2300	2900
1 1/4							4900	7000
2								11,000

POUNDS PER THOUSAND FEET OF FLAT STRAPPING

	3/8"	1/2"	5/8"	3/4"	1 1/4"	2"
.010	12.73	16.98	21.22	25.20		
.012	15.28	20.38	25.46	30.56		
.015	19.09	25.46	31.84	38.20		
.018	22.92	30.56	38.20	45.85		
.020	25.46	33.96	42.44	50.94		
.023	29.29	39.05	48.82	58.58		
.028				71.28		
.035				88.88	148.58	
.050					211.86	340.13

NAIL-ON STRAPPING (Sizes, Tolerances and Breaking Strengths)

Size	Tolerances, Plus or Minus		Breaking Strength Minimum
	Width	Thickness	
5/8" inch wide, 0.018 inch thick	0.005	0.002	500
3/4" inch wide, 0.028 inch thick	.005	.003	940
1" inch wide, 0.018 inch thick	.050	.002	810

The minimum breaking strength of strapping ordered with nail slots based on the metal area of the strapping taken across the slot and a minimum ultimate tensile strength of 45,000 lbs. per sq. in.

NUMBER OF FEET PER POUND OF FLAT STRAPPING

	3/8"	1/2"	5/8"	3/4"	1 1/4"	2"
.010	78.55	58.89	47.13	39.68		
.012	65.45	49.07	39.26	32.72		
.015	52.36	39.26	31.41	26.18		
.018	43.63	32.72	26.18	21.81		
.020	39.26	29.45	23.56	19.63		
.023	34.14	25.61	20.48	17.07		
.028				14.03		
.035				11.25	6.73	
.050					4.72	2.94

REFERENCE DATA for steel strapping users. Clip and save these charts for use in your plant or ship-

ping room. These tables are for conventional strapping only. Do not use them when using special duty straps.

Often it's the only packaging shippers use. By bundling and strapping several smaller units into one package, they protect the loads, make them easier to handle, simplify inventory, and reduce the number of shipping labels needed.

Package closure—In addition to making wood and fibre boxes stronger (see *package reinforcing* above), strapping gives packagers a quick and effective way to close containers of all kinds. It's strong and easy to apply. And while the customer has no trouble opening the containers, it makes them pilfer-proof because thieves can't remove the straps without leaving tell-tale evidence of tampering.

Palletizing and unitizing—Handling and storage is safer and more efficient when the loads are supported by bands of steel. With steel straps you can put heavy machinery, or other hard-to-handle items, on pallets to improve handling and shipping. Unitizing (with or without pallets) makes bigger loads possible, makes loads cheaper and easy to handle, and makes them sturdier for stacking.

Interior packaging—Don't overlook strapping for jobs like bracing products inside the package, fasten-

ing accessory items, suspending the load from the container walls, or fastening insulation and cushioning materials.

Carloading—Heavy duty steel strapping is one of the best and most widely used materials for securing loads inside boxcars and other vehicles. There are three ways: full floating, anchored, and controlled floating. In the full floating method, loadings are not attached to the car walls or floor in any way. Several loads are usually strapped together to make fewer heavier loads, which are free to move or 'float' when the car jerks. The weight of the load plus the friction between it and the car floor tends to bring it to a sliding stop, cushioning the impact.

In the anchored load method, the lading is strapped to the car walls and/or floor. Anchor plates nailed to the car hold the strapped load tightly in place.

The controlled floating method is a combination of floating and anchored. The load is strapped and anchored, but the straps are free to slide through the anchor plates. That way the load can shift somewhat, like on runners.

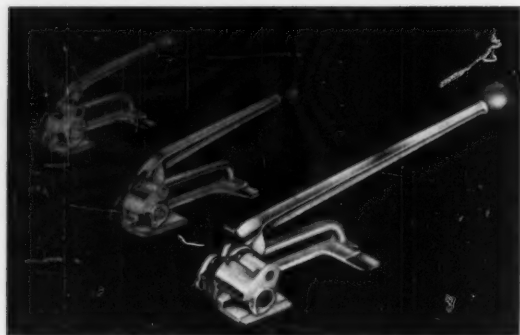
Kinds of Strapping:

Most common types of strapping are standard and heavy duty. Anyone who works with strapping knows
(Continued on page 146)

Would you like extra copies of these articles? As long as they last, one or two copies are available free, larger quantities at cost. Write: The Editor, MATERIAL HANDLING ENGINEERING.

Tools for Strapping

They're as important as the strapping itself, and each year there are more to choose from



HAND TOOLS come in varieties for light, medium, or heavy strapping. Tools like these are simple to use. You can operate them from the front, rear, or sides.

WHILE STEEL STRAPPING DOESN'T CHANGE very much through the years, the tools for applying it do. Today there are enough strapping tools on the market to confuse a buyer who's not sure exactly what he's looking for. They range from simple plier-like hand tools to complicated, automated machines that apply strapping faster than the eye can follow. They're all useful, when you use them for the jobs they were designed to do.

There are three things strapping tools do: tension, seal, and cut. No matter how elaborate, all strapping tools do one or more of those jobs. If you keep that in mind, strapping tools won't be a mystery to you, and you and your supplier shouldn't have any trouble selecting the right ones for your needs.

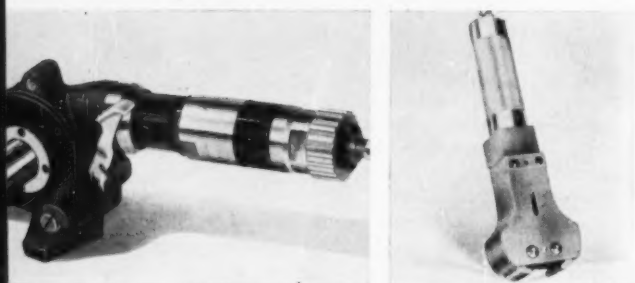
Tensioning

The right tension on the strap is a must. Too loose or too tight and you may lose the benefit of strapping. If the strap is too loose it might fall off, allow the product to jar until it breaks, or allow the container to work its way open. If it's too tight it may damage the product or its container, or break before it reaches its destination.

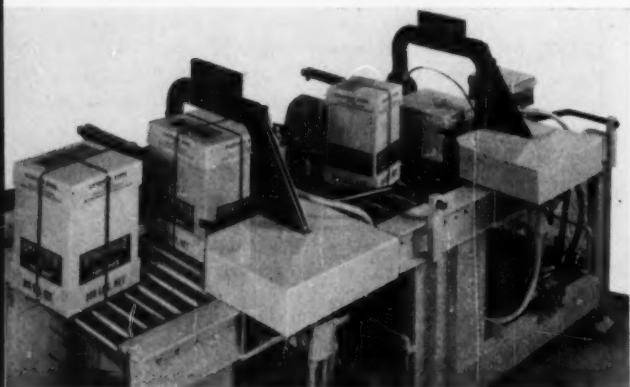
Tensioning may be by hand, air, or electricity. The tool may be pre-set to give a fixed strap tension, or it may be adjustable for various tensions.

One of the most common types of tensioner for flat strapping is the feed wheel type. These have unlimited takeup, and you can adjust them for various gauges. They rest flat on the surface being

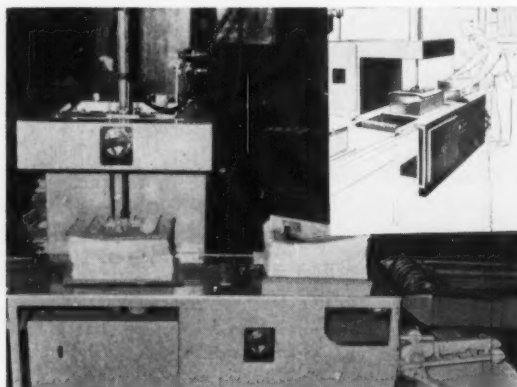
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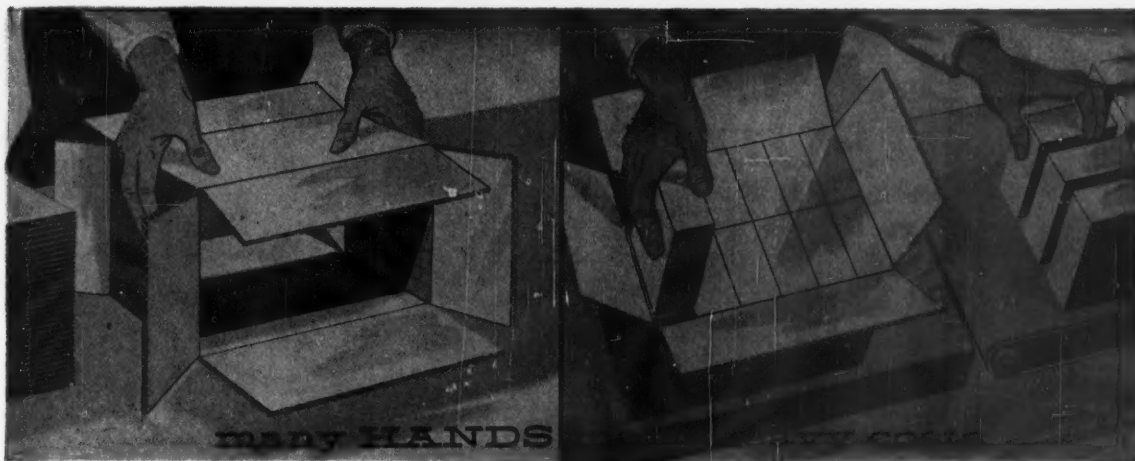
AIR POWERED TOOLS. Stretcher (left) gives quick, easy, automatic tensioning. Sealer (right) puts crimp in heavy duty strap and seal at the push of a button.



AUTOMATION IN STRAPPING. This machine straps any size carton to pre-set tension. After putting on one strap it turns the box for another. No operator.



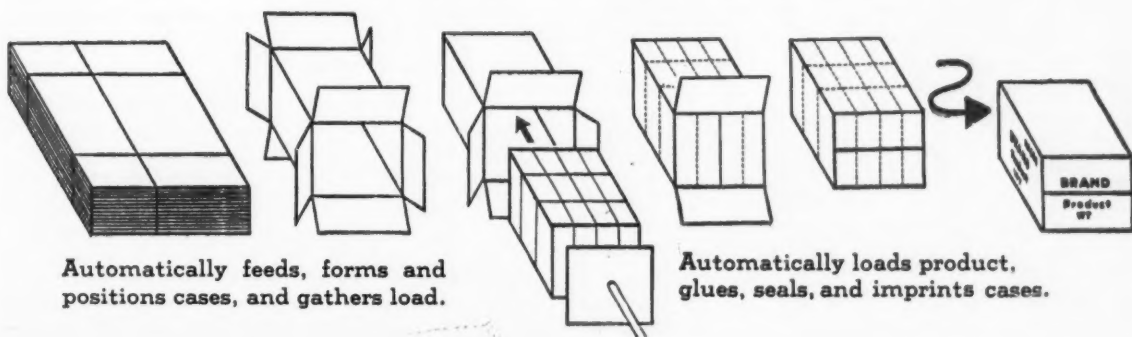
AUTOMATIC STRAPPING MACHINE wraps and bundles newspapers. It puts wrappers on top and bottom, compresses, then ties the load with round steel straps.



1st **Packomatic®**
T.M. Reg. U. S. Pat. Off.

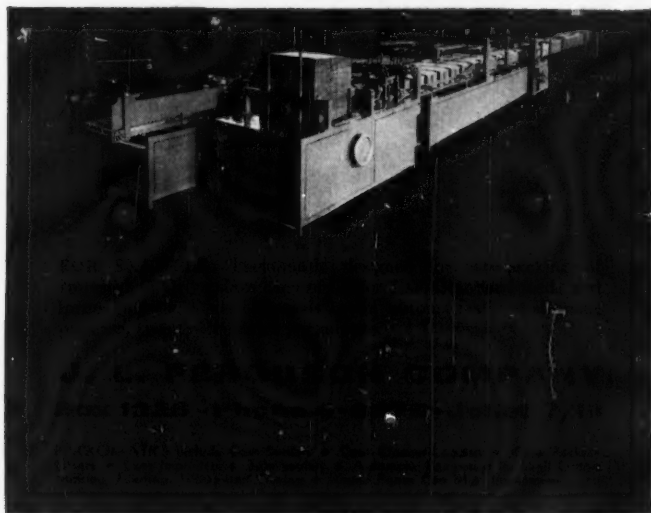
equipment do any or all your casing operations

AUTOMATICALLY



Automatically feeds, forms and positions cases, and gathers load.

Automatically loads product, glues, seals, and imprints cases.



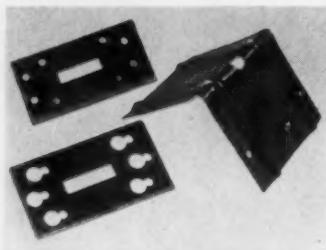
For casing round, square, rectangular or free-form packages of virtually any size

You need not be a big company to enjoy the economies of Packomatic equipment. If your volume requires even one person to hand-form cases, hand-fill, hand-seal, or hand-imprint them, then a Packomatic machine can be a sound investment. Only a minute or two of attention at infrequent intervals is needed even for a complete automated Packomatic line, capable of matching the output of a dozen pair of hands. And in addition to reducing direct labor production costs Packomatic can, by utilizing end-opening shipping cases, reduce your paper-board costs up to 25%. And mechanically end loaded cases are stronger because the flats give added resistance to weight and shock. In addition they stack better because their uniformly flat sides enables keying of pallet loads. Write, wire or phone us for facts on how to reduce your case packing costs.

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SEALING is one of the most important parts of strapping. Here's a properly applied crimped seal.



ANCHOR PLATES (left) hold the loads in rail cars. Corner protector (right) guards load edges.



DISPENSER is portable, keeps strap feeding freely. Note suspension setup for strapping tool.

Accessories for Strapping

They help you do the job better and may suggest new applications in your plant.

TO COMPLETE the strapping picture, there are many accessories you should be familiar with. While not as hard to select, they're as much a part of the strapping operation as the strapping itself, or the tools to apply it.

By far the most common way to secure the strap is with metal seals. (Other ways are by spot welding or, for very light strapping, plain crimping.)

Seals

Most seals fall into two classes: open and closed. The open type is used for all but heavy-duty strapping. It's U-shaped, and snaps over the strap after tensioning. It's the best bet for semi-automatic and automatic operations where the seals are fed from magazines. The closed type for heavy-duty strapping is stronger, but must be slipped over the strap by

hand before tensioning. Pick your seals according to the strapping you use and the tools that will tension and seal it. *See chart below for the average number of seals needed for a given amount of strapping.*

Dispensers

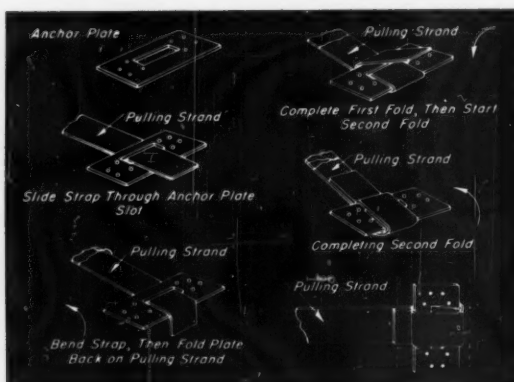
Many users underestimate the importance of picking the right strapping dispenser. They waste time, labor, and materials as a result.

The simplest dispensers are coil holders or coil trays. They keep the coil of strapping in an easy-to-use position, and away from floors or other places where it might get damaged. Some have braking mechanisms so the coil doesn't continue to unwind after the operator stops pulling. Others have power

(Continued on page 144)

Length in Ft.	015	018	020	015	018	020	015	018	020	015	018	020	025
4	1312	1091	985	1123	816	737	786	654	589	654	545	491	427
4 1/2	1166	925	894	999	728	655	698	581	524	581	485	436	379
5	1049	873	777	898	655	589	628	523	471	523	436	392	341
5 1/2	954	794	715	817	596	536	571	475	428	475	396	357	310
6	874	727	656	749	546	491	524	436	393	436	363	327	284
6 1/2	807	672	605	691	504	453	483	402	362	402	335	302	263
7	749	623	562	642	463	421	449	373	336	373	311	280	244
7 1/2	699	582	524	599	437	393	419	349	314	349	291	261	227
8	656	545	492	561	409	363	383	327	294	327	277	245	213
8 1/2	617	513	463	528	385	347	369	307	277	307	256	231	201
9	583	485	437	499	364	327	349	290	262	295	242	218	190
9 1/2	552	459	418	473	345	310	331	275	248	275	229	206	180
10	525	436	393	448	328	294	314	261	235	261	218	196	170
10 1/2	500	415	374	428	312	280	299	249	224	248	207	187	162

NUMBER OF SEALS needed for 100 lbs of strapping given for various length, width, and gauge of straps.



SIX STEPS in proper threading of steel straps into anchor plates for strapping loads into railroad cars.



THE PARADE OF DERBY Electrics



"TAPE AT A TOUCH"

Derby presents the first *applicator* for attaching pressure sensitive labels to products on a production line basis . . .

PLUS a complete line of Electric gummed tape and pressure sensitive tape and label dispensers for every packaging, sealing and labeling job. Fast, versatile, and accurate, they can be operated intermittently or continuously by foot pedal, hand switch, or photo-electric cell . . . dispense definite lengths, multiple definite lengths, or lengths visually measured.

There are models with 2-speed drive, rheostat speed controls, thermostatically controlled heat, coder, and tape straightener. Widths range from 1/2" to 8".

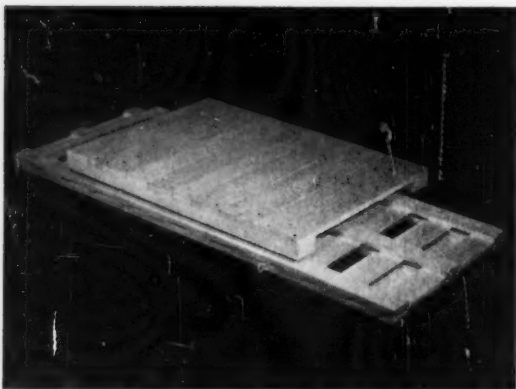
Ask your Derby Distributor for details, or write direct

DERBY SEALERS, INC.
Derby, Connecticut

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WIRE MESH COLLAPSIBLES in aircraft plant have door at front, dividers for storage compartments. The contents are easy to see through the open sides, simplifying inventory. There's another row above catwalk.



NAILED WOOD PALLET BOX folds down to a few inches for storage. Note the wire hinged corners that allow it to collapse. These boxes come in many styles, open or solid, with various ways of attaching to base.



LARGE STORAGE BOXES consist of six separate panels held together by removable metal corner braces, are strong enough to stack 3 high with heavy loads. This idea is also used with other bracing hardware.

In production . . .

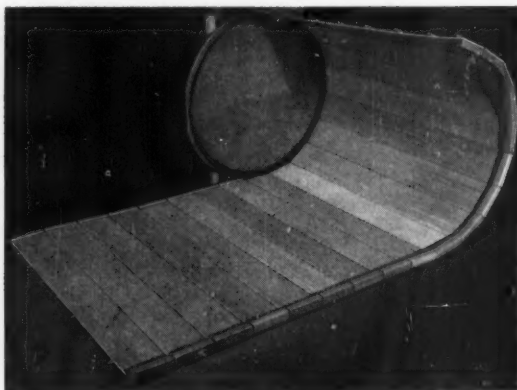
In storage . . .

In transit . . .

Collapsible

THERE ARE TWO MAIN ADVANTAGES to collapsible containers: they save storage space and reduce return freight costs. Wherever plants use a large number of containers, forward-looking engineers are finding ingenious ways to use these knock-down-and-set-up boxes. As an investment, they usually pay for themselves in short order.

Collapsible containers may be made of pressed metal (usually steel), wire mesh, wood, or wirebound. They come in almost any size and shape, palletized or with other handling provisions. You can use them as in-plant containers, returnable shipping containers, or both. Either way, you save because of their ability to collapse to a fraction of their original height when not in use. With plant storage space expensive and often not available, that can be a blessing. And with the high freight costs for returning empty containers, it can make the difference between profit and loss. Lately, many carriers have granted lower rates for return of reusable collapsibles. That makes them even more attractive.



WIREBOUND DRUMS collapse flat, hold any products, even free-flowing bulk items, without bulging. The one-piece wall is firmly fixed to the base with one steel strap. Wirebounds come in many sizes, shapes.

Containers Save

... in space
... in shipping costs
... in time

Wooden Boxes

Wood is an ideal container material. It's strong, and light; and damage, while unlikely, is easy to fix.

Wood boxes come either nailed or wirebound. There are three common designs: (1) Sides and ends are hinged together with staples or wire, forming a blank or mat. This sets on a pallet or conventional bottom. (2) Sides, ends, top, and bottom are fastened with some sort of removable locking device. (3) Sides, ends, top, and bottom have interlocking cleats that hold the box together.

If you want to use collapsibles as returnable shipping containers, wood has an important advantage. It's light, so return freight is cheap. Properly used, wooden containers are good for several trips.

You can get wooden collapsibles for almost all products. Machinery manufacturers use them to ship heavy machines. Warehouses use them to store everything from toothpaste to furniture. Produce growers use them to ship fresh fruits and vegetables. Tobacco companies use collapsible wirebound hogsheads. Plastics firms use collapsible wirebound drums for shipping pellets of plastic materials. You can use wooden collapsibles for even bulk powders and granules.

At least three government specifications cover wooden collapsibles: MIL-C-18416 (Crate, Demountable, Plywood, for Household Goods); PPP-B-00580 (Box, Wood, Household Goods); and TO 00-85-11 (Construction of Container for Long-Term Storage and Domestic Shipment of Household Goods). And the Armed Forces are studying new ways to use them.

Metal Boxes

Collapsibles of stamped metal are used mostly for in-plant, rather than for shipping. Collapsible wire mesh are used equally well for in-plant handling and shipping. They're strong, hold heavy loads, stack well, and last for years with little or no maintenance.

Probably the strongest collapsibles of all are the pressed steel. They come in a variety of sizes and can be handled by lift truck or crane.



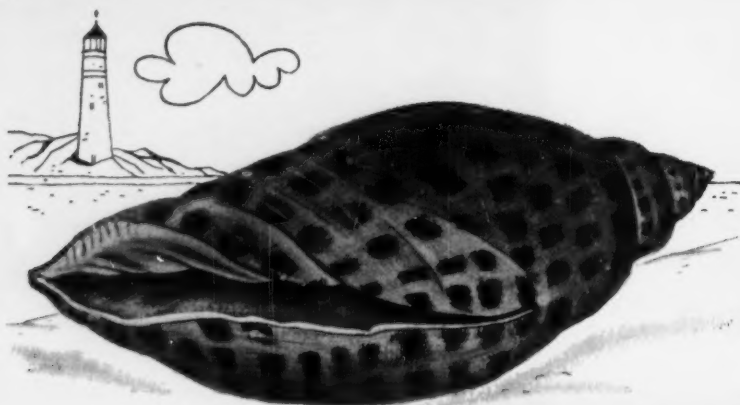
COLLAPSIBLE METAL BOXES in use at automotive parts plant. Used for shipping and in-plant storage, they collapse to a fraction of their set-up height when not in use. The manufacturer provides them to its suppliers, so all materials arrive in standard boxes.

Wire mesh collapsibles are lightweight and strong. Their see-through sides make it easy to check quantity and condition of contents. They're available in many styles, with drop front, side opening, dividers for compartments, casters, padlock covers, etc., all without hindering collapsibility. The mesh may be fine enough to hold even small nuts and bolts. Many manufacturers use wire mesh containers for cleaning and degreasing parts without removing them from the container.

Use Them in a System

Whatever collapsible containers you use, don't overlook new chances to use them. Make them work for you as often as possible; they're not doing you any good in storage. Many companies work them into their handling system by using them as in-process containers as well as for storage and shipping. Often a company will provide all its suppliers with collapsibles, so that all incoming materials arrive in the same containers, to fit right into the system.

For their cooperation in this article, MHE thanks: Berger Div., Republic Steel Corp.; Cargotainer Div., Tri-State Engineering Co.; Evans Box Co.; General Box Co.; and the National Wooden Box Association.



**only nature
makes
a better one!**



WIREBOUND BOXES AND CRATES

Mother Nature is pretty tough competition when it comes to functional, dependable, rugged "packaging". Superstrong Wirebound Boxes and Crates, however, will give you these same features quickly, easily, economically. Why not talk over your industrial packaging requirements with a Superstrong Wirebound engineer? All it takes is a word from you today!

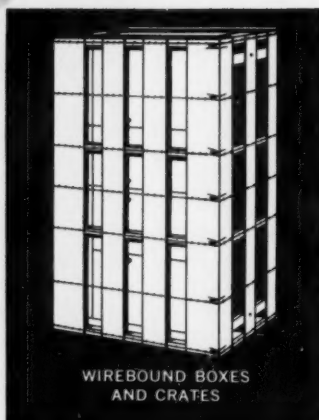
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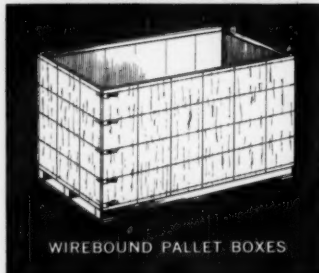
1440 West 21st Place • Chicago 8, Illinois

REPRESENTATIVES IN ALL PRINCIPAL INDUSTRIAL AREAS

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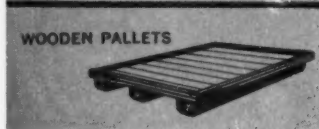
WIREBOUND BOXES
AND CRATES



WIREBOUND PALLET BOXES



CORRUGATED FIBRE BOXES



WOODEN PALLETS



In-plant containers . . .

Hold Over A Ton: Parts Or Materials

THESE CONTAINERS for in-plant material handling by Goodyear Aircraft Corp. will hold up to 3,000 pounds. They were developed for the meat industry, but their strength, light weight, and handling ease makes them ideal for sorting, shipping, or storing in other industries.

The bins consist of a plastic body, glass fiber reinforced, with a separate base bonded on. It rests on 4 neoprene rubber foot pads. The bins are completely



CIRCULAR assembly line is site of bonding and setting leg height.

water and moisture resistant, resilient, and highly impact resistant. They're lined with a fine textured surfacing mat which provides a smooth surface, and they have a drain hole and plug. They can easily be steam-cleaned.

They are designed to use in production. You can handle them with fork or bed lift trucks or hoist lift-bars. They come with 5, 7½, or 9½ inch legs. Extra reinforcement is provided at all critical points.

They measure 4 feet in length, 41.5 inches in width, and 36 inches in depth. They hold a volume of 33.5 cu. ft. or 260 gallons, weigh only 130 pounds.

MATERIAL HANDLING ENGINEERING
Circle 111 on Reader Service Card➤

The Ludlow Line Protects Your Products Better

**This tape's built-in activator
saves shippers time, money**



Wetting agents *used* to be a problem. They were costly, messy, unreliable and a nuisance to prepare.

Ludlow's Comet Tape has solved this problem with a wetting agent that never fails built right into its trade-mark. As the tape passes over the brush, the Comet trade-mark activates the glue, assuring fast, effective sealing with a minimum of pressure. This exclusive Ludlow feature is available with both Comet Snake Tape* (reinforced) and Comet superstandard kraft gummed tape.

Comet Tape is typical of Ludlow's job-tailored packaging products. Look to Ludlow for greater protection, lower costs and faster packaging. We'll consider it a privilege to serve you.

*Rule 41 — approved for center-strip sealing.



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VPI-COATED PAPERS • GREASEPROOF PAPERS • WATERPROOF PAPERS • POLY-COATED PAPERS • GUMMED TAPES • FEDERAL SPEC. PAPERS • LABEL & SPECIALTY PAPERS • PLASTICS

Produce packaging costs cut by . . .

Packaging Line Geared for Seasonal

BEFORE it could enter the pre-packaged fresh produce field, Hobbs Banana Co., El Paso, Texas, needed a packaging system that could overcome a serious disadvantage: the seasonal nature of the business.

The company was aiming at the retail market for fresh lettuce, radishes, carrots, celery, etc. But because some seasons are busy and some slow, conventional grading and sizing conveyors didn't seem justified.

Ralph Rotolante, Hobbs' general manager, designed a special packaging line to suit the company's sometimes-high-sometimes-low needs. He had it built locally. His analysis: Automatic packaging was out; it couldn't change with the needs. Manual was too slow, expensive. It had to be something in between.

Rotolante's system uses four electric turntables, driven by ½-hp motors, geared for slow, constant

turning. They can be used with one operator for small runs, or as many as eight operators in peak seasons.

Each turntable has three shelves, Christmas-tree style. Washed and trimmed vegetables, as they reach the turntable, go on the middle shelf. Pre-formed cartons revolve on the bottom shelf. The operators, positioned around the turntable, take the cartons from the bottom shelf with one hand, vegetables from the middle shelf with other, combine the two and place the filled carton on the top shelf. As the table rotates, a gate shunts the filled packages from the top shelf onto a short conveyor leading to a wrapping machine, then off for shipping.

The system changes slightly for items wrapped in bags, like carrots. Two sorters take a bunch of uniform size and put them in funnels fastened to the



PACKAGING TURNTABLE in action. Operator at left fills cartons with lettuce put on middle shelf by two

girls at center. Girl at right runs wrapper. Machine at top left opens cartons, puts them on bottom shelf.

Production

edge of the middle shelf. Baggers, stationed further around the table, place a bag over the funnel, tip it so the carrots drop into the bag, then put it on the top shelf. From there filled bags go to a weighing station where they're check-weighted, stapled, then shipped. Oranges, etc. are handled the same way.

Capacity: The machines have turned out up to 700 cartons of lettuce a week, 5,000 4-lb bags of oranges, 20,000 bags of carrots, 25,000 pounds of bananas, plus smaller amounts of other produce.

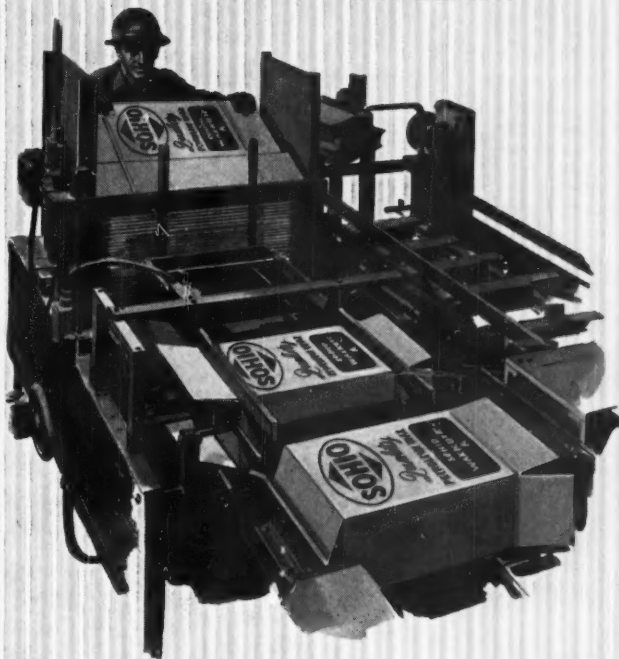


PLASTIC BAGS for carrots. Note tilting funnels on middle shelf.



BAG CLOSING is fast, easy with foot operated stapling machines.

*These boxes do everything
but balk...*



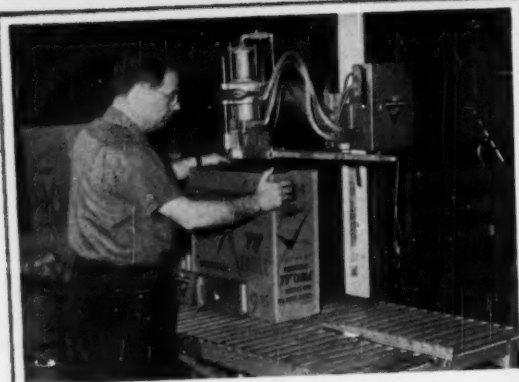
H & D corrugated boxes for shipping Sohio wax start through this machine knocked down. They're set up, packed and sealed—automatically. Would precision packaging speed up your operations? Better see H & D.



Hinde & Dauch

Division, West Virginia Pulp and Paper

AUTHORITY ON CORRUGATED PACKAGING • SANDUSKY, OHIO
15 FACTORIES • 42 SALES OFFICES



REDUCES LABOR COSTS 50%! Four other methods were previously used to close filled cartons for this manufacturer's automotive and television accessories. Two people averaged 1100 cartons per 8-hour day. International Dual Stapler installation which simultaneously staples top and bottom flaps of filled cartons has upped production to 1500 (400 more cartons per day) — with just one operator.



REPLACES TWO OTHER METHODS—CUTS MATERIAL COSTS IN HALF! In a newly streamlined packaging program, this chain manufacturer has replaced glued-up corrugated cartons and wire-bound boxes with stapling, using an air-operated International "Air Boxer". Results: Substantial material savings and labor costs cut in half.

Case Histories Prove INTERNATIONAL STAPLING METHOD CUTS CARTON CLOSING COSTS BY 50% AND MORE!



CLOSES BOTH ENDS OF CARTON IN ONE OPERATION—INCREASES PRODUCTION! This manufacturer turned to the versatility of the International Twin End Stapler for closing tops and bottoms of their center-slot shipping cartons. International Twin-End Staplers are primarily used to close both ends of partial overlap, full overlap or telescope cartons, but can also handle center slot cartons. Adaptable to a carton size range from 6" to 28".

NO OTHER METHOD OF CARTON CLOSING offers you such large savings in so many ways — in material, productivity, storage, safety, reusability and labor. These savings are possible because the International method of stapling is **fast** (up to 500 cartons per hour — according to your needs); **efficient** (cartons are filled before stapling); **neat and safe** (a better-looking carton that's pilferproof and reusable.)

ASK YOUR INTERNATIONAL REPRESENTATIVE for details on other dollar, time and labor-saving advantages . . . and for information on International units best suited to your operation.

INTERNATIONAL
Gold Crown



Write for "The Modern Low Cost Way to Close Cartons."

International Staplers

INTERNATIONAL STAPLE & MACHINE COMPANY
P. O. BOX 270
HERRIN, ILLINOIS

Originators of Carton Closing Staplers

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MATERIAL HANDLING ENGINEERING

Circle 32 on Reader Service Card➤

Brainard

STEEL STRAPPING

offers these 3 big facts

**High quality
...controlled
all the way**

The wide scope of Brainard control of quality begins at the iron mine and follows through ore smelting, steel making and, finally, to fabrication specifically for your packaged product. You can be sure of highest quality.

compare!

An assured supply for quick delivery

Your exact size, large or small—will be promptly handled because steel manufacturing and steel fabricating are one company—located in the same area. We've got the steel. We've got the capacity. Your order can be produced—on time.

Our service obligation is— Action for You

Here's typical service action that Brainard personnel can give. A customer called at 11:45 one morning for an emergency order of a special strapping. Three hours later his order was on the road in a Brainard truck. It was delivered at 7:30 next morning—446 miles away. He got what he wanted—when he wanted it.

...In short, we're big enough to do anything—and middle-sized enough to want to—Call us... Prove it to yourself!

BRAINARD

Safe-Ty

STRAPPING

In Canada: Brainard Steel, Canadian Division, Toronto, Ontario

MAKERS OF TENSIONAL, HEAVY DUTY STRAPPING, SEALS, ACCESSORIES, TOOLS FOR CARLOADING AND PACKAGING

CORROSION-PROOF PROTECTION WITH CLEVELAND CONTAINERS



Illustrated are telescope containers used by Cleveland Rock Drill Plant, Le Roi Division, Westinghouse Air Brake Co., and spare parts they manufacture.

These high grade precision parts are assured of protection from rust and corrosion by use of Cleveland Containers with liners treated with VPI (vapor phase inhibitor), a new and highly effective corrosive barrier.

Parts are clean and ready for use when removed from the package. The necessity of a heavy coat of grease or oil is eliminated. Parts may be removed from, or replaced in the original container with no loss of effectiveness of the VPI.

Containers, of 2-piece construction as shown above, can be used to package parts in various lengths. Of quality fibreboard with metal ends, they also provide protection from damage in handling, shipping and storage. Can be labeled with pre-printed wrappers, direct printing or plain color wraps.

Effective and economical, these Cleveland Containers are ideal for packaging spare parts, precision instruments and other articles requiring protection from rust and corrosion.

★ ★ ★

**For help on any of your packaging problems,
write our nearest plant.**

Why pay more? For quality products . . . call CLEVELAND!

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BETTER BULK HANDLING

(Continued from page 71)

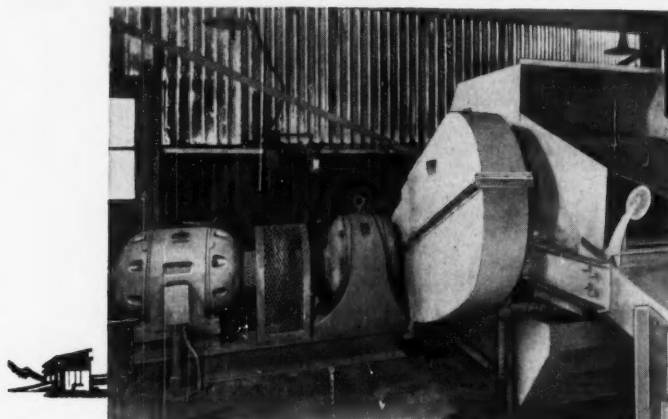
other is discharging. The two can mix 20 to 25 tons an hour.

At the mixing station, they add liquids from a 10,000-gallon storage tank outside the building. They are piped in through plastic pipe and stainless steel valves and fittings. Material is discharged from the mixer into a chute that channels the material to a dryer. After drying, the mix goes into a cooler. The cooled material leaves at about room temperature, moves away on a short conveyor and is lifted vertically by a bucket elevator to the top of the building where it falls onto a final classifying screen. The finished fertilizer comes through the screen as uniform granules. At this station the fines are collected and returned to the process. Oversize particles go to a cage mill for reduction, then again to the screen. The finished fertilizer is moved 85 feet across and up a 20-degree slope by conveyor to a traveling bridge crane. The crane has a 2-ton capacity. It travels on a rail installation atop stub columns for a high safety factor. A 32-foot conveyor (shuttle and reversible type) on the crane distributes the fertilizers (10 different grades are made) to the proper storage bins.

The entire north half of the plant is used for storing finished fertilizer. Each 20-foot bay along the north wall serves as a bin that extends to the plant center line. Adjacent bins have common sides, use plant structural supports (vertical H-beams on 15-foot centers) from wall to center line. Simply laying 15-foot 2 x 8 inch planks flat, held by the H-beam flanges and separated with space blocks, makes a common open-type side that allows the stored product to expand.

Tractor shovels are used to move material in the bins and to feed conveyors in the south half of the plant which move bulk material to the rail and truck shipping docks. Automatic packers meet the demand for fertilizer in paper bags. Fork lift trucks move pallets of bags for truck and rail delivery.

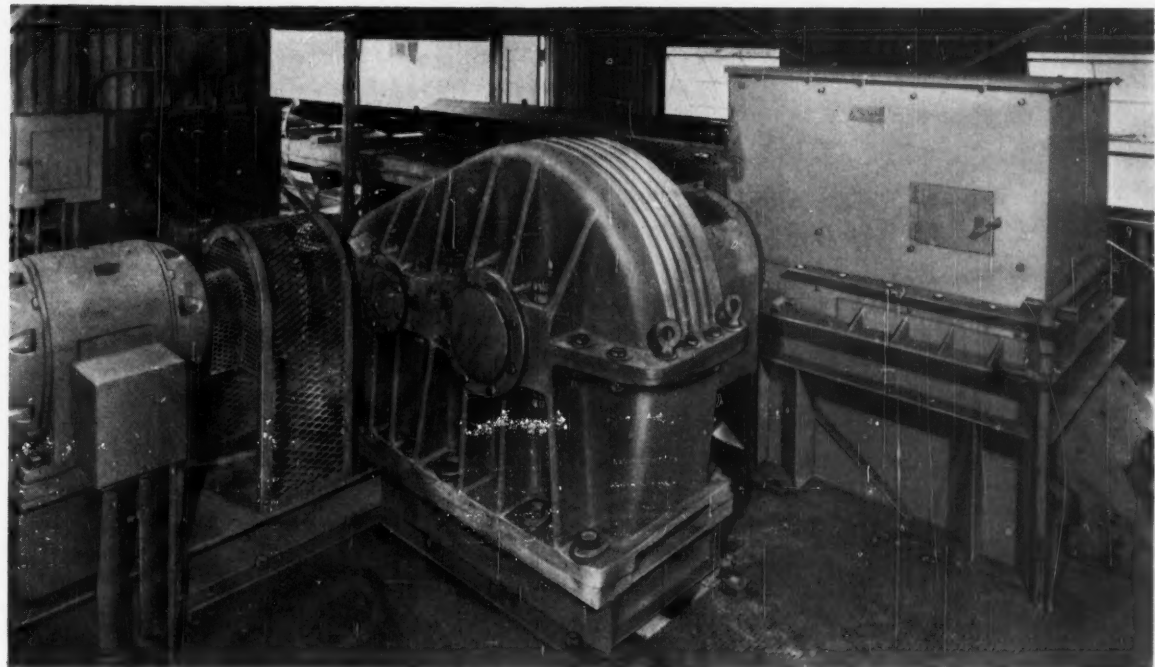
FOOTE BROS. DRIVES IN THE CEMENT INDUSTRY



LINE-O-POWER Reducer Driving Tunnel Belt feeding Final Conveyor Belt.

...Move Cement
Clinker

at 2000 TONS
PER HOUR



MAXI-POWER Reducer Driving Final Conveyor Belt, Universal Atlas Cement Plant, Buffington, Indiana

Lake carriers get a fast turn-around when they load clinker at United States Steel Corporation's Universal Atlas Cement Plant at Buffington, Indiana, because the clinker loading belts driven by Foote Bros. Reducers have a maximum capacity of more than 4 million pounds per hour!

The 48" wide, 2445 ft. long inclined Final Conveyor Belt, driven by a Foote Bros. MAXI-POWER Parallel Shaft Drive, which is fed by two 36" wide Tunnel Belts equipped with LINE-O-POWER Drives, moves the fused raw material from mountain-high stock piles into the holds of boats at the rate of 2000 tons per hour.

This is tough, demanding service. Drives are subjected to massive shock and maximum peak loads... yet the Foote Bros. Drives have never been shut down for emergency repair or maintenance!

Dependability like this is a standard by-product of Foote Bros. drive know-how. Why not take advantage of our more than a century of experience and specialization in building high quality transmission products?

There's a Foote Bros. Drive made to meet your power transmission requirement. Ask your nearby Foote Bros. Authorized Distributor for information or assistance concerning your power transmission problems. He's ready to help you.



FOOTE BROS.

Better Power Transmission Through Better Gears

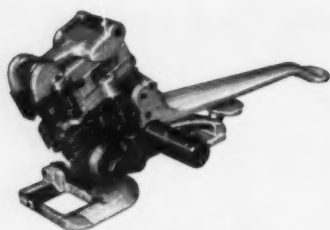


FOOTE BROS. GEAR AND MACHINE CORPORATION • 4577 S. WESTERN BOULEVARD • CHICAGO 9, ILLINOIS

Circle 84 on Reader Service Card for more information

SEPTEMBER, 1959

99

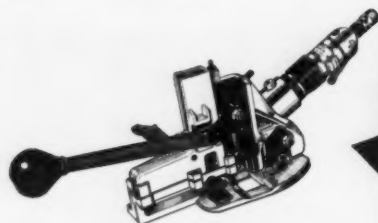
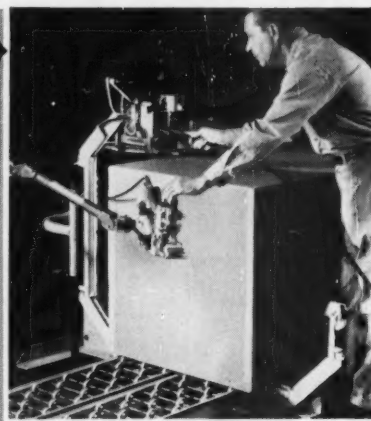


The only one-hand
strapping tools
SFC Series

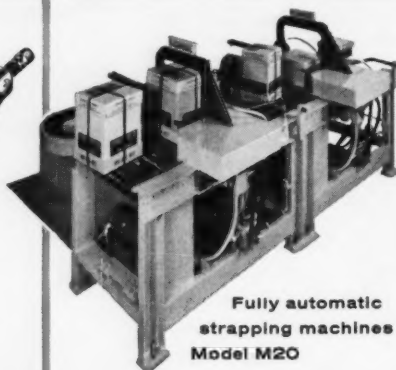


Power strap feeders
Model PSF

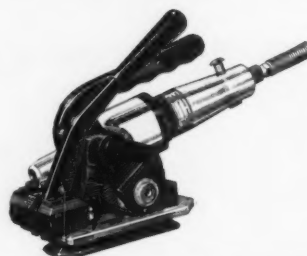
Complete line of
air power tensioners
PN Series



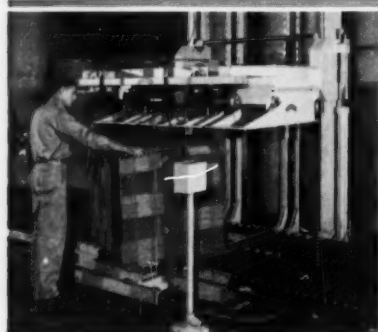
Air power portable
strapping machines
AP Series



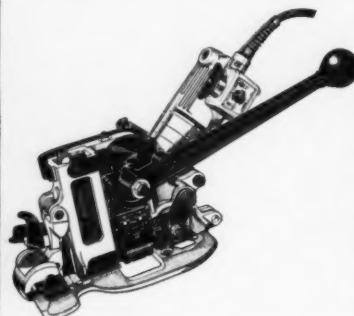
Fully automatic
strapping machines
Model M20



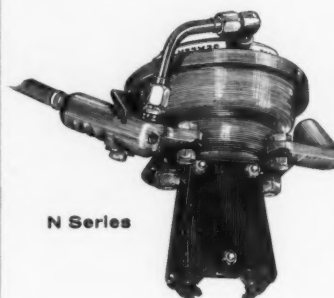
The first air power feed wheel
tensioner for heavy duty strapping
FN Series



First compression strapping
machines with built-in turntable
for 2-way strapping. CSF Series



Electric portable strapping
machines. AE Series



N Series

Heavy-duty air
power sealers

9 ways to new savings

Binding things together with steel strapping is a low cost way to eliminate individual handlings, save space, and prevent damage. These nine machines—part of the most complete line of equipment in the steel strapping in-

dustry—create new ways to save with strapping. Signode will be glad to help you select the right equipment and devise methods to make the most of it. There's a Signode man near you. Call him today, or write:



First in steel strapping

SIGNODE STEEL STRAPPING CO.

2618 N. Western Avenue, Chicago 47, Illinois

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

Circle 159 on Reader Service Card for more information

MATERIAL HANDLING ENGINEERING

Circle 85 on Reader Service Card➤

GAYLORD Gives Your Packaging a Lift

Let Gaylord lighten your load when you come to weighty packaging decisions. A nearby Gaylord man will analyze your entire packaging program . . . help you tone up the weakling containers . . . tone down the muscle-bound.

For tough corrugated boxes that deliver better protection, better promotion, better profit . . . put the weight on that experienced box-builder—your G-man. He's ready, now.



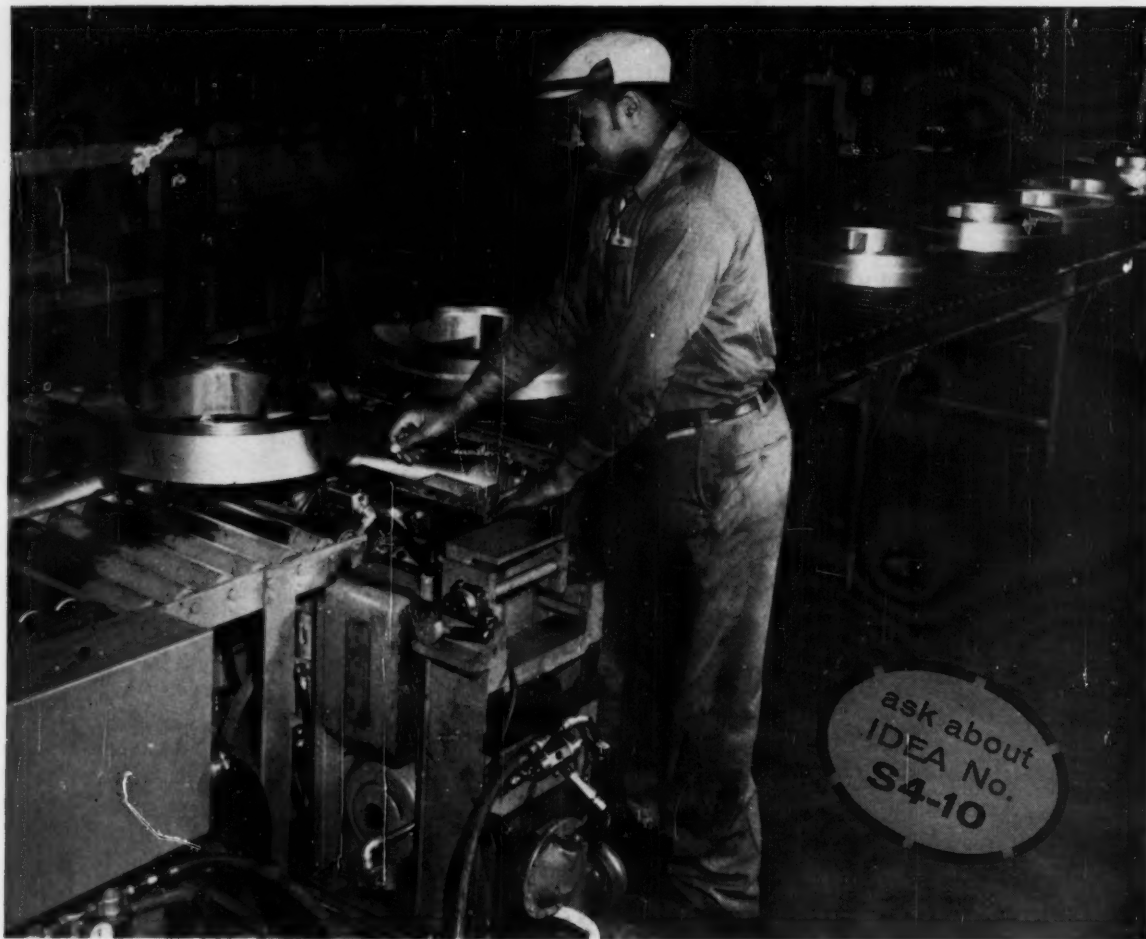
GAYLORD
CONTAINER CORPORATION



HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**





ask about
IDEA No.
S4-10

Plan with your AIM*. . . Edgcomb Steel and Aluminum does . . .
Powered Machine aids effortless coil strapping

EDGCOMB STEEL AND ALUMINUM CORPORATION, HILLSIDE, N. J., and their Acme Idea Man developed a faster, easier way to handle and strap heavy coils of steel with the new Acme Steel F4 Strapping Machine and Indexing Table. (Idea No. S4-10)

Now Edgcomb Steel and Aluminum has doubled its coil strapping capacity and saves about eight man-hours per shift. Power lifts the coil above the indexing table top on three tapered rollers that rotate the coil for strap placement. The F4 tensions each strap to predetermined tightness, seals and cuts it. The F4 has unlimited strap feed and take-up, and makes its own seals from a coil.

***Plan with your Acme Idea Man.** Backed by Acme Steel engineers, he can help adapt Acme Steel Strapping Machines to your needs. Call him or write: Dept. MJS-99, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Limited, 743 Warden Ave., Toronto 13, Ontario.

Acme Idea Man,
C. A. Lested,
serves many
companies with
time and money-
saving ideas.



Ask your Acme Idea Man to show you the new 10 minute movie on this equipment.



STEEL STRAPPING

Circle 3 on Reader Service Card for more information

MATERIAL HANDLING ENGINEERING

Circle 103 on Reader Service Card➤

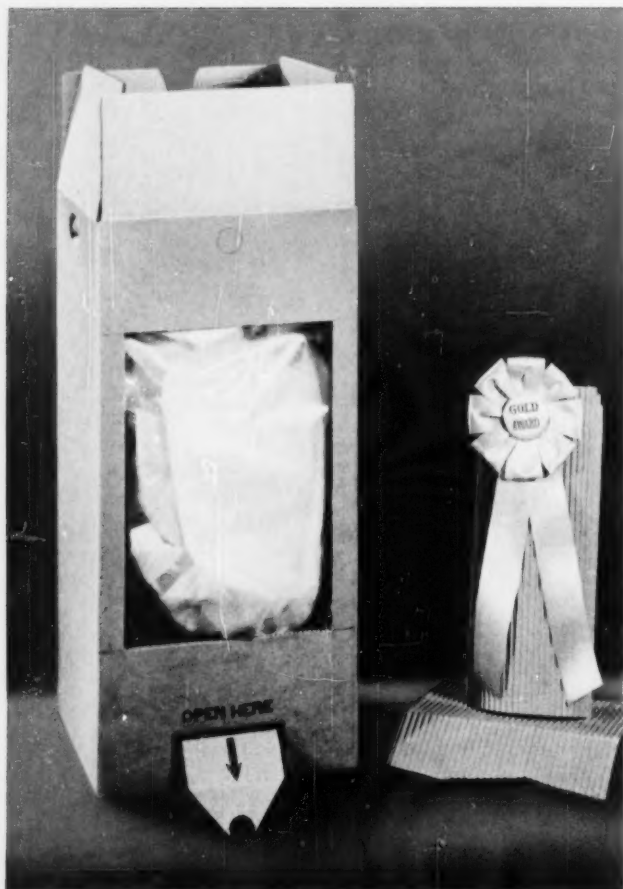


Presenting the 10
prize-winning designs
by the Container Division
of International Paper

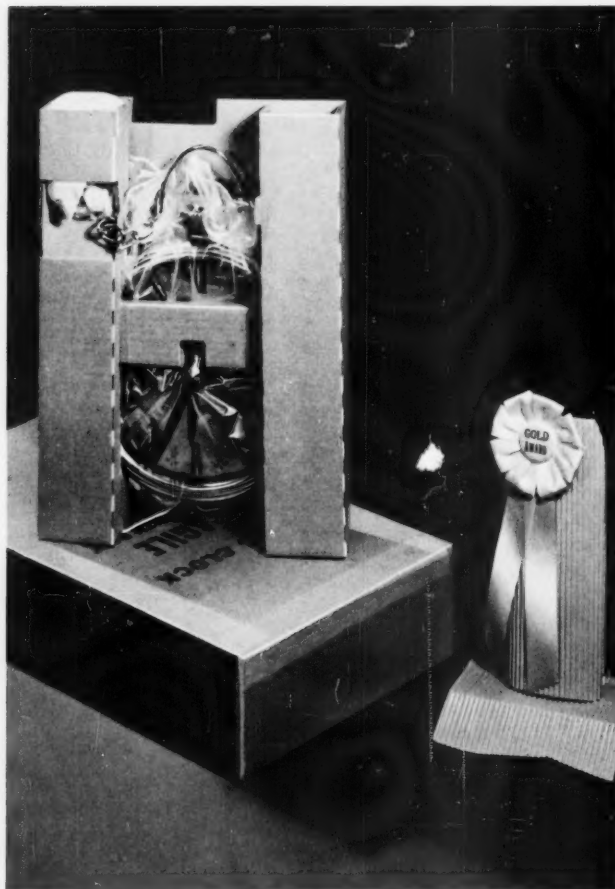
Exhibited at the Fifth Annual Competition of
the Fibre Box Association in Washington, D. C.



International Paper wins 10 new or improved

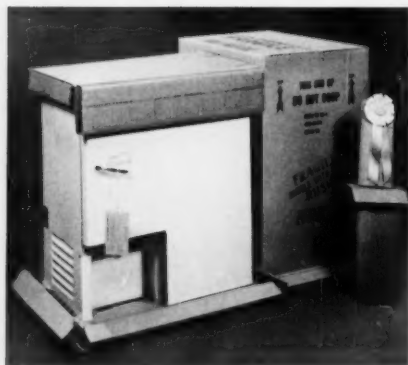


GOLD AWARD Five-gallon container with plastic interliner for milk or bulk fluid products: National Dairy Products, Chicago.



GOLD AWARD Electric clock container with die-cut inner packing to "float" the large glass face: Haddon Clocks of Chicago.

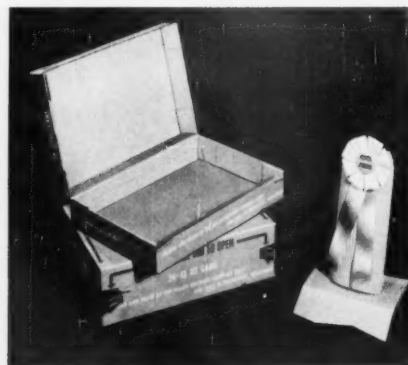
These are the ten award-winning designs by International Paper, exhibited this year at the Fifth Annual Competition of the Fibre Box Association.



SILVER AWARD Corrugated container for home milk dispensers. Special platform bottom ends need for wooden skids: Norris Dispensers Inc., Minneapolis.



SILVER AWARD Shipping container for outboards with inner stand made of preassembled die-cut sheets: Kiekhaefer Corporation, Fond du Lac, Wisconsin.



SILVER AWARD Canned beer container for use in automatic, high-speed, end-loading can machines. With pull-tab opener: Miller Brewing Co., Milwaukee.

national awards for creating uses for corrugated

Container Division receives two Gold Awards, three Silver Awards, and five Bronze Awards for 1958's best-designed corrugated containers in nationwide competition.

THE NATION'S LEADING packaging and merchandising authorities did the choosing. And at the recent nationwide Fibre Box Competition, they handed the Container Division of International Paper *ten major awards*.

We're proud but not surprised. The same design and manufacturing experts who won this extraordinary recognition are busy creating new and ingenious shipping containers for our customers every day.

As a result, our customers have come to expect the unexpected, almost as a matter of course. They'll tell you that in every International Paper container you get these 7 *extra values*:

1. **First-class engineering**—truly crea-

tive packaging by the same team that originated the tube-and-cap design, now standard in the industry, the corrugated nail container, and others.

2. **Time-proved box-making skill**, acquired in making hundreds of millions of corrugated shipping containers every year.

3. **Built-in savings**. Our container specialists know how to select the right materials for greatest strength with least weight, the best design to save material and pack easily. Result: you save on packaging labor, shipping costs, and damage claims.

4. **Convenient delivery**. We deliver on time from 19 different box plants.

5. **Virgin fibre for greatest strength**,

smooth surface, uniform color. These containers are made from America's top-quality liner, Gator Hide® kraft, and famous Chemfibre® corrugating medium.

6. **Fair prices**. Our container prices are based on fair market value consistent with the top-quality materials.

7. **A dependable source of supply**. These are the only containers backed by the full resources of International Paper: timberlands, research labs, board mills, design service, quality control—total resources unmatched by any other container supplier.

Your Container Division packaging expert is as near as your phone. See map on back for number.

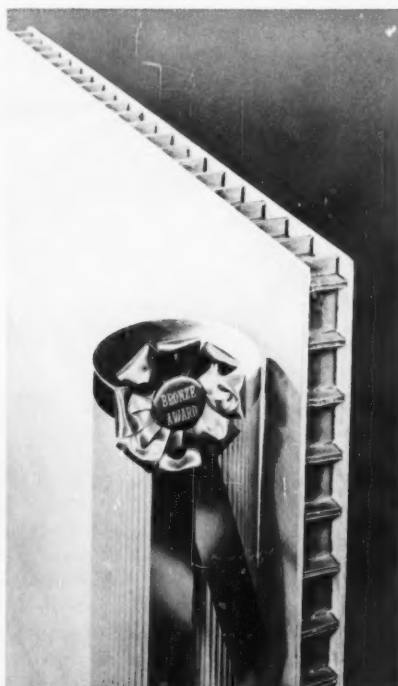
Container Division **INTERNATIONAL PAPER** New York 17, N. Y.



BRONZE AWARD Printing-paper container with polyethylene inner lining in place of asphalt laminates: S. D. Warren Company, Westbrook, Maine.



BRONZE AWARD Combination corrugated and wooden shipping container for avocados. Weight-saving and efficient: Calavo Growers of California.



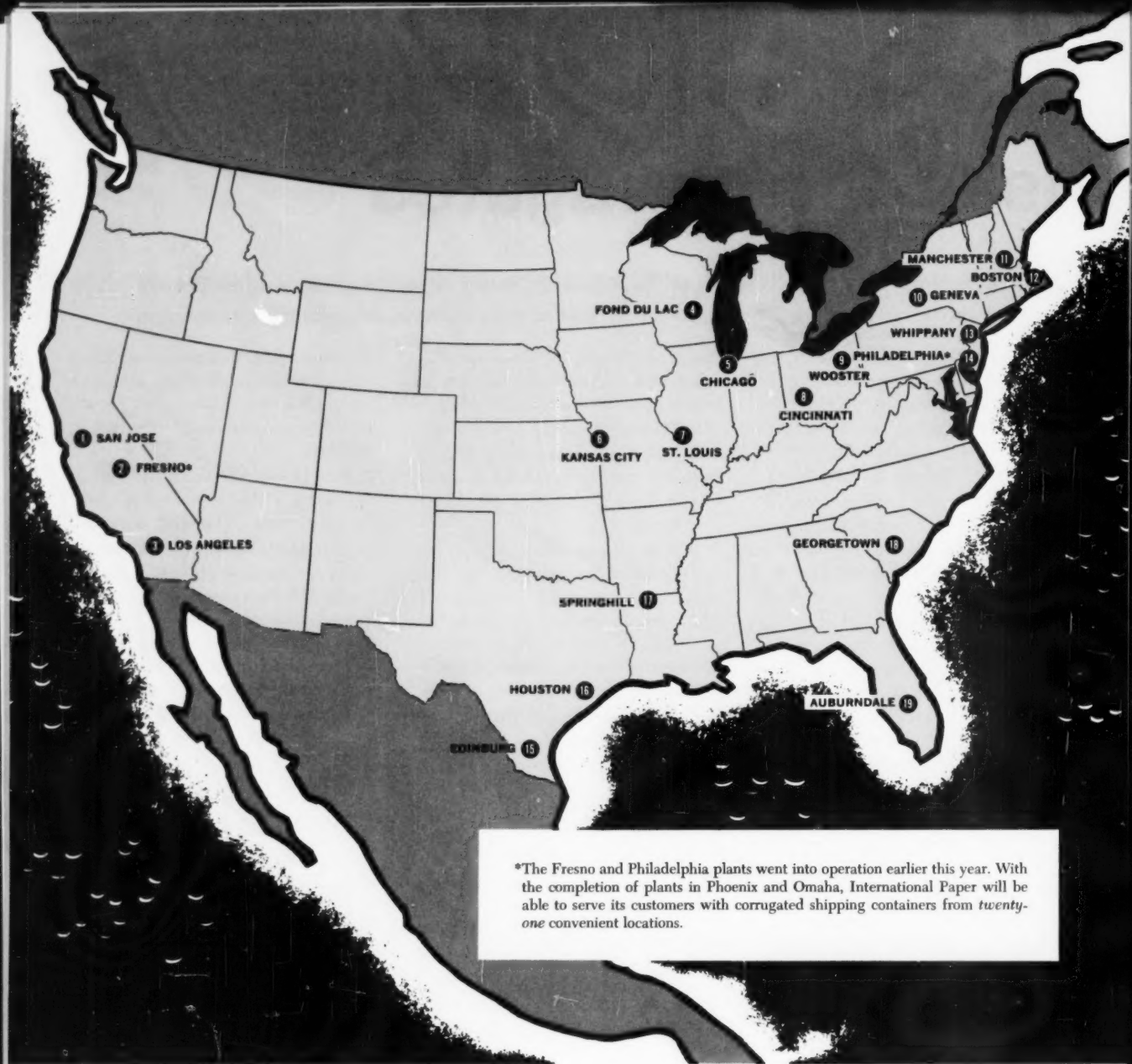
BRONZE AWARD Corrugated fibre-board-and-plywood combination building partition. Low in cost, light in weight, strong, ideal for all internal construction.



BRONZE AWARD Do-it-yourself mortar box made of water-resistant fibre board. Re-usable or disposable. Long Bell Division, International Paper Co. and others.



BRONZE AWARD Bonding-mortar container with polyethylene bag liner. Cuts costs, gives 70 per cent more storage space: A. P. Green Fire Brick Co., Mexico, Mo.

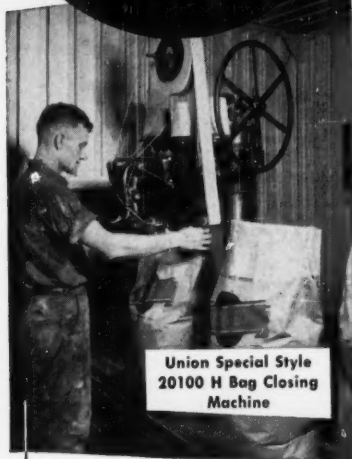


These 19 box plants of International Paper assure you quick, convenient on time delivery

- | | | | | |
|---|---|---|--|---|
| 1 San Jose, California
1601 Las Plumas
CLayburn 1-2210 | 5 Chicago 38, Illinois
5133 West 65th Street
LUdlow 5-7100 | 8 Cincinnati (Mason), Ohio
Mason, Ohio 4010 | 12 Boston (Somerville 45), Mass.
Clyde & Warwick Streets
PRospect 6-1900 | 16 Houston, Texas
6028 Navigation Blvd.
WAlnut 3-9156 |
| 2 Fresno 26, California*
Box 591
7447 No. Blackstone Ave.
BALdwin 2-5281 | 6 Kansas City 19, Kansas
2100 Kansas Ave.
Packers Station,
Box 708
FAirfax 1-2500 | 9 Wooster, Ohio
689 Palmer Street
ANGelus 3-5040 | 13 Whippany, New Jersey
TUcker 7-4000 | 17 Springhill, Louisiana
Box 881
LEhigh 9-2543 |
| 3 Los Angeles 54, California
6150 Sheila Street
RAYmond 3-4853 | 7 St. Louis 11, Missouri
7901 Michigan Avenue
FLanders 3-3322 | 10 Geneva, New York
Gambée Road
GENeva 9-3946 | 14 Philadelphia (Aldan), Pa.*
Oak Lane & Providence Rd.
MADison 2-0750 | 18 Georgetown, South Carolina
GEorgetown 3-3711 |
| 4 Fond du Lac, Wisconsin
WAlnut 1-9600 | | 11 Manchester, New Hampshire
Hall & Hayward Streets
NATional 3-8825 | 15 Edinburg, Texas
DUDley 3-1651 | 19 Auburndale, Florida
WOOdlawn 7-1181 |

here's
how
to close...

MULTIWALL PAPER BAGS



Union Special Style
20100 H Bag Closing
Machine

FOR lower production costs . . . stronger, neater closures . . . ability to get out rush orders in a hurry, you can't beat Union Special Bag Closing Machines! Specially built to stand up under heavy production schedules, these machines provide the high output rates needed to meet modern competitive conditions.

In the Union Special line, it's easy to find the right unit to meet your requirements. ASK FOR RECOMMENDATIONS.

SEND FOR THIS BULLETIN!

It's easy to find just the right unit to meet your individual needs in Union Special's big line of bag closing machines. Ask for a copy of Bulletin No. 200, "UNION SPECIAL FILLED BAG CLOSING MACHINES."



Union Special®
MACHINE COMPANY

415 N. Franklin St., Chicago 10, Ill.
Circle 181 on Reader Service Card
SEPTEMBER, 1959



STRADDLE trucks of Woolworth Co. They have polyurethane wheels.

Swivel Wheels No Longer Wear Out

WHEEL replacement, costly and time-consuming, no longer troubles the F. W. Woolworth Co. It used to, in spite of their adhering to recommended load-carrying capacities, inspecting periodically, and following a replacement schedule. They still were dissatisfied.

At their New York City warehouse, they use 22 straddle trucks. The swiveling of the wheels made the tires tear or chunk out. A wheel's average life was 2 to 3 months. They had to replace the wheels in pairs. The job took at least 2 hours.

After trying several makes of wheels, with no better results, the company tested Disowheels, made by Disogrin Industries, Inc. They have polyurethane elastomer in them. It has high tensile strength, a high tear resistance, and high compression load capacity.

Running under the same conditions as the old wheels, Woolworth tested them for 8 months. Inspection showed no appreciable wear, no chunking out. Besides that Woolworth enjoyed noiseless operation.

As a result of the test, they installed Disowheels on 12 more straddle trucks. The wheels now have been in operation for 1½ years without a single replacement. They're now equipping the rest of its fleet with Disowheels.

FOR IMPRINTING Flexible Wraps and Films INDUSTRIAL'S Rainbow Coder



Attached to either continuous or intermittent types of packaging, wrapping or overwrapping machines — HAYSEN, BATTLE CREEK, STOKES, TRANSWRAP, OLIVER, GLOBE, BARTELT, WRAP-AID, etc. — the RAINBOW Coder automatically imprints clearly, sharply and permanently at packaging point all combinations of colors, letters and numbers for marking, dating or coding your products.



Streamline
marking operations
Cut handling costs
Increase
volume handled
Reduce
inventory costs
Speed up
customer service

Everywhere packagers of fresh and frozen foods, baked goods, candies, hosiery, underwear — anything packed in polyethylene, cellophane, waxed paper, glassine, foil, tissue or any material that takes a hot roll leaf impression—know that the RAINBOW Transleaf Coder sets a demanding standard of comparison hard to beat because the RAINBOW Coder contributes so efficiently to profits.

The economical, rugged RAINBOW saves package pre-printing, inventory and storage costs—needs no operator, no ink, no makeready— and next to no maintenance.

Before you buy any marking equipment, take a good look at the RAINBOW CODER — you'll have a standard for comparison! For complete information, write today.

Dept. MHE

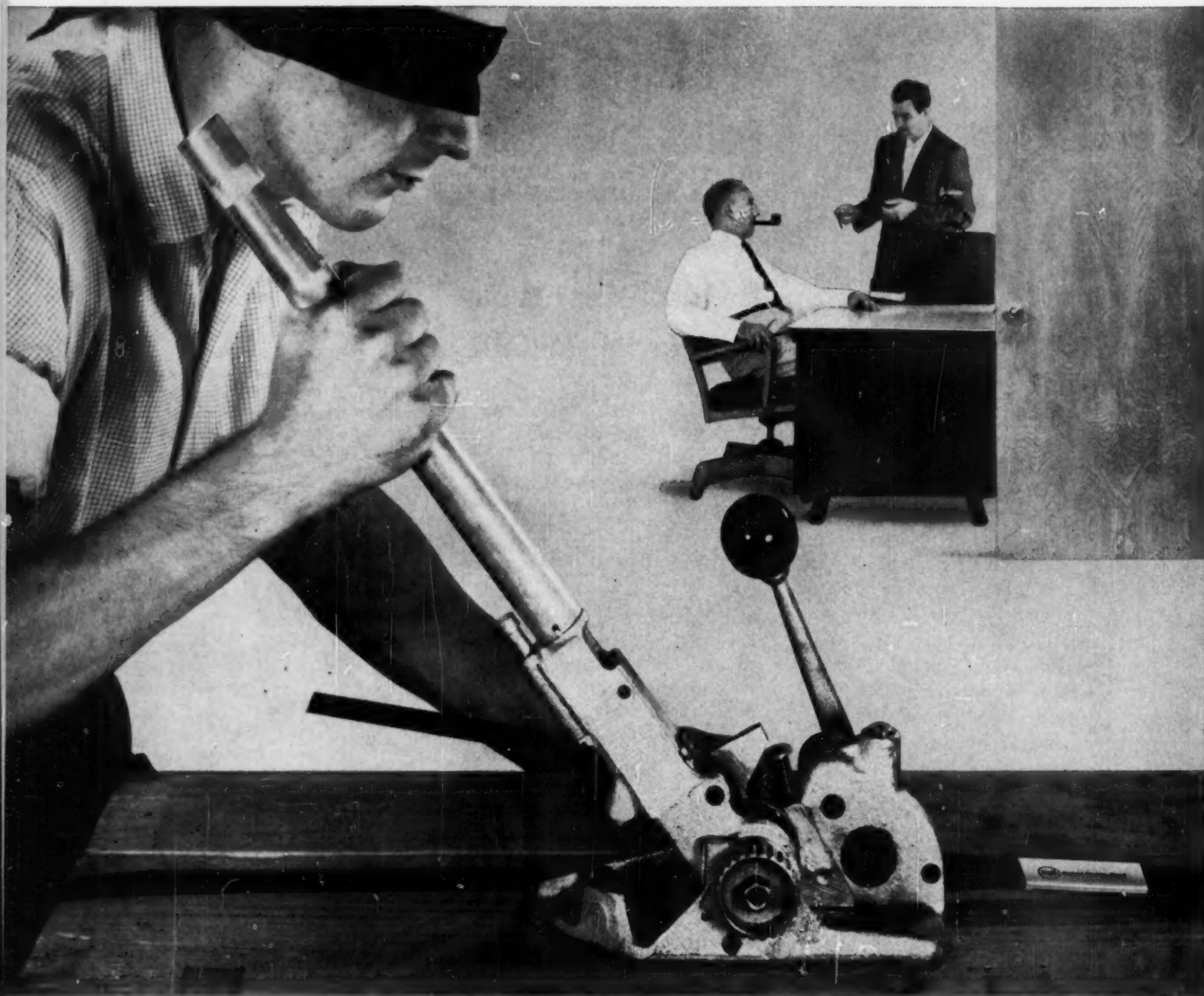
IDENTITIES	DATE
Contents	Packing
Packaging	Production
Inspector	Perishables

"Rainbow Coder" is a trademark for Industrial's marking equipment.

ime INDUSTRIAL MARKING EQUIPMENT
455 HERRIMAN ST. COMPANY, INC.
BROOKLYN 8, N.Y.

Circle 102 on Reader Service Card

Another example of **USS** COMPLETE
 Remarkable new Stretcher and Sealer



**U. S. Steel Supply
 Division of
 United States Steel**



Lightens your work. The 62 Stretcher and the 67 Sealer are an ideal combination of flat strapping tools to lighten the work of the packaging supervisor and erase management's worries about the safe delivery of quality materials to customers. By means of a recessed set screw in the handle, the proper tension for a particular job is set into the 62 Stretcher and may be read on a calibrated indicator. When the operator tightens the strap to the pre-set tension, a loud "click" signals him that this part of the job is done. There is no guesswork, no uncertainty, no difference in tension from strap to strap, no variation from operator to operator or from morning to evening . . . the tension is always exactly right. There is no need for the supervisor to check every strap.

U. S. Steel Strapping formerly Gerrard Steel Strapping
 Steel Service Centers and Complete Steel Strapping Service Coast to Coast

✦ **STRAPPING** ✦ **STRAPPING TOOLS**

STEEL STRAPPING SERVICE

that supervise themselves



Brightens your profits. The 67 Sealer also eliminates uncertainty and the expense of constant supervision to be sure that seals will hold. Model 67 is so constructed that once the sealing motion is started it must be carried through to completion to release the sealer. It is impossible to "half seal" or to apply a loose seal. Because the 67 Sealer applies a deformed-type seal and therefore retains 95% to 100% of the ultimate strength of the strapping, it is often possible to use a narrower strap than with the cut-type sealer. This advantage can produce a substantial savings in strapping costs.



Widens your potential. In addition to saving the time of supervisory employees, with the self-supervising 62 Stretcher and 67 Sealer it is possible to load and tie faster and more efficiently. Thus, you might speed up your production line and enlarge your total operation. A USS Steel Strapping Specialist will be glad to advise you on the application of these heavy-duty flat steel strapping tools to your operations. His experience with all types of tying operations with both flat and round steel strapping can be very helpful . . . and it is yours for the asking. A free copy of our Sweet's Catalog insert is available on request. U. S. Steel Supply Division, United States Steel Corporation, 208 South LaSalle Street, Chicago 4, Illinois.

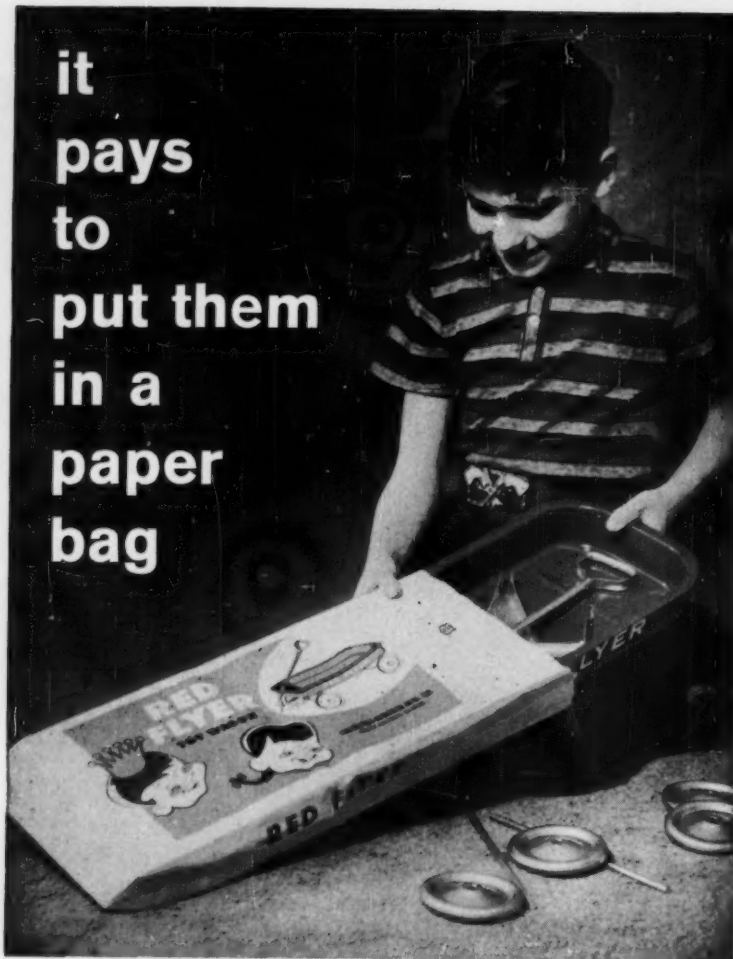
USS is a registered trademark

★ **TECHNICAL ASSISTANCE**

Circle 183 on Reader Service Card for more information

when you pack "knock-downs" for HOME ASSEMBLY

it
pays
to
put them
in a
paper
bag



Compact, convenient paper bags make excellent security agents for packaged home-assembly products. They speed packing, help lower shipping and handling costs, conserve valuable warehouse and shelf space.

Take the toy wagon bag, above. It packs 22 put-'em-together metal parts. Bag replaces carton, is lighter, less expensive. Colorful printing serves as economical advertising for brand name and contents.

Write for free Booklet CP-1 today. It illustrates dozens of different ways paper bags are helping manufacturers save money, both inside the plant and out.



Commercial Packaging
UNION BAG-CAMP PAPER
CORPORATION

285 BROADWAY, NEW YORK 7, N. Y.
Circle 179 on Reader Service Card for more information

STANDARDS FOR TOW LINE TRUCKS

(Continued from page 81)

completely assembled truck shall withstand a static load of 5000 pounds, loaded in an area 2 x 2 feet in the center of the truck midway between the truck ends. Any part of the deck shall withstand a concentrated static load of 2000 pounds on a 6 inch square.

2.3 Running Gear

The running gear consists of two rigid casters and two swivel casters of the medium heavy classification as covered by CFTMA Standard CFTCI-58 on Industrial Caster Standards. The two rigid casters are welded to the rear channel of the truck frame, with the double ball race swivel casters at the front or rack end of the cart attached to the end channels by $\frac{3}{8}$ " cap screws having lock nuts. Bolt heads are flush with steel channels.

2.3.1 Medium Heavy Duty Casters:

These casters are those types expected to perform under conditions normal to manufacturing and warehouse material handling facilities and are of commercial anti-friction ball and/or roller swivel bearing design for manual ($2\frac{1}{2}$ to 3 mph) operations. Reference Caster Standards CFT-CI-58.

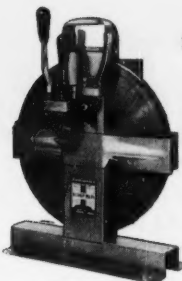
2.3.2 Wheels:

Wheels are either 6 or 8 inch in diameter with 2 inch wide molded on rubber tires or demountable type tires. Optional wheels with metal, plastic or other treads may be required or desirable for certain floor conditions. Especially hardened or prepared floor surfaces are necessary with hard tread wheels operating with a tow line conveyor or tractor system where travel is over the same route. See 2.4 for drawbar pull standard. Wheel bearings are roller or ball bearings made from hardened alloy rollers or balls with hardened outer races.

2.3.2.1 Molded-On Industrial Wheels per CFTMA Standard CFT-WI-56

These wheels, also known as cured-

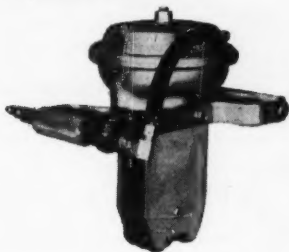
NEW PRODUCTS



COMBINATION STRAPPING UNIT

A money-saving strapping "package" including stretcher, cutter and dispenser—at a low-cost package price, is now available. Write Dept. 46, A. J. Gerrard, 1960 Hawthorne Court, Melrose Park, Ill.

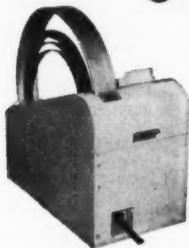
PNEUMATIC SEALER



New effortless double crimp pneumatic sealer provides faster, positive sealing action. Write: Dept. 27, A. J. Gerrard, 1960 Hawthorne Court, Melrose Park, Illinois.

STRAP CUTTER

Cuts strap to 2" x .050 with less effort. Legs on lower handle provide extra stability. Long handles give greater operator safety. Write: Dept. 22, A. J. Gerrard, 1960 Hawthorne Court, Melrose Park, Illinois.



DIAL-A-BAND DISPENSER

Set the dial and press a button — new dispenser automatically feeds and cuts exact length and number of straps needed. Write: Dept.

63, A. J. Gerrard, 1960 Hawthorne Court, Melrose Park, Illinois.

SEPTEMBER, 1959

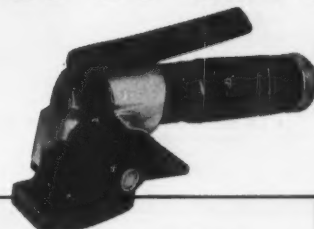


New pneumatic strapping tools . . .

INCREASE OUTPUT BY 50%!

TIMED IN FIELD TESTS, the new line of A. J. Gerrard pneumatic stretchers were able to cut strapping time up to 50%. These new stretchers enable an operator to tension strap by a simple twist of a dial. The stretchers will take various widths and thickness of band . . . will also operate well on an extremely small surface. They are easy to load. Strapping can be used from a continuous coil for fast, economical operations. Because of this unique combination of features, these tools are rated as the most versatile stretchers yet developed.

USE THE COUPON or the reader service card for complete specifications. Upon request we will also include our new catalog illustrating a complete line of strapping and packaging equipment and supplies.



CHECK THE FEATURES OF THIS STRETCHER

- Very small strapping surface required.
- Use strapping direct from coil—no waste.
- Adjustable tension control.
- Strap easily inserted into stretcher.
- Easily suspended on counter balancer.

FREE NEW CATALOG



A. J. GERRARD

& COMPANY

STRAPPING MATERIALS

1960 Hawthorne Court

MELROSE PARK, ILLINOIS

- ☐ Please send specifications sheet featuring pneumatic stretcher.
☐ Send free copy of Handbook of Strapping and Materials Handling Products.

COMPANY _____

NAME _____ TITLE _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Circle 86 on Reader Service Card for more information

Circle 43 on Reader Service Card

CAPCO DOCK COVERS GIVE YEAR 'ROUND PROTECTION

CAPCO Dock Covers completely enclose the space between car and building doorways protecting loading and unloading during bad weather... preventing accidents... insuring against loss of heat or refrigeration. 51 different models in any size for every loading problem.



Write for literature and name of nearest distributor.

CAPCO

627-24 PROSPECT AVENUE • KANSAS CITY 24, MISSOURI

STANDARDS FOR TOW LINE TRUCKS

(Continued)

on industrial wheels, rubber-tired industrial wheels, and vulcanized-on rubber tired wheels, can be used on four-wheel hand powered industrial trucks, four-wheel trailer-type industrial trucks, two-wheel hand trucks, and in casters, conveyors, or for any type of industrial or moveable equipment wherein loads and speeds are within the specified limits.

Wheel Requirements Construction:

The metal wheel casting or stamping shall consist of a good grade of semi-steel, malleable iron, aluminum, or sheet steel, and shall be designed to give sufficient strength to resist shock impacts with a good factor of safety, in accordance to the specification for maximum operational load rating and speed.

Tensile Strength:

The tensile strength of the tread

Circle 29 on Reader Service Card



FOR LOW COST MATERIAL HANDLING

USE...

BIGELOW-GARVEY COLLAPSIBLE TIGHT-CORNER PALLET BOXES

THEY'RE REUSABLE

- Economical
- Safe and Neat
- More Convenient
- Quickly Assembled
- Handles up to 5000 lbs.
- Collapsible When Not in Use
- Specially Made For Your Needs

Over 33 Years Material Handling Experience

ALABAMA ARIZONA ARKANSAS CALIFORNIA COLORADO CONNECTICUT DELAWARE FLORIDA GEORGIA ILLINOIS INDIANA IOWA KANSAS KENTUCKY

Write for complete details and prices to... **BIGELOW-GARVEY** lumber company
324 W. HURON STREET • CHICAGO 10, ILLINOIS

Multistamp Stenciling System STOPS Freight Addressing ERRORS

at JOHNSON & JOHNSON

Shipping address errors are virtually eliminated when printed directly on cartons by the Multistamp Stencil Duplicator. Print becomes identical smear-proof permanent part of every carton in shipment. Quantity users now save big money on VOLUME-PAK stencils... either plain or FORM-CUT. One-day service on repeat FORM-CUT stencil orders... less than 10 days on new orders.

MULTISTAMP
STENCIL DUPLICATOR

THE MULTISTAMP CO. Norfolk, Va.



Cartons addressed accurately, identically as dollars roll to shipping dock. Average 1 1/2 sec. per carton... one man-one hand-operation.



Write Today for your free copy of the illustrated new how-to (and why) book about the Multistamp Marking Method.

POWERFUL PULL

to open or close
any freight car door
in 20 seconds or less!



ONE MAN CAR DOOR OPENER

SAVES TIME . . . SAVES LIVES . . . SAVES MONEY!

The Nolan Model H One Man Car Door Opener has been in successful use for many years, by thousands of companies who recognize its exclusive features of speed and safety. This popular tool enables one man to do by himself what formerly required the time and assistance of several men, usually taken off other jobs, to tug and yank while risking mangled hands, strained backs and other serious injuries. With a few quick pulls on the anchor chain as shown here, one man can get the most stubborn door rolling and wide open in a jiffy.

It will keep men working steadily and safely without exposing them to the hazards present when make-shift methods are used to open car doors. Note above how operator is away from the front of the door . . . away from its injurious, killing effects if it should fall!

Order one or more Nolan Model
H Car Door Openers Today!

The Nolan Company 110 Pennsylvania St., Bowersville, Ohio

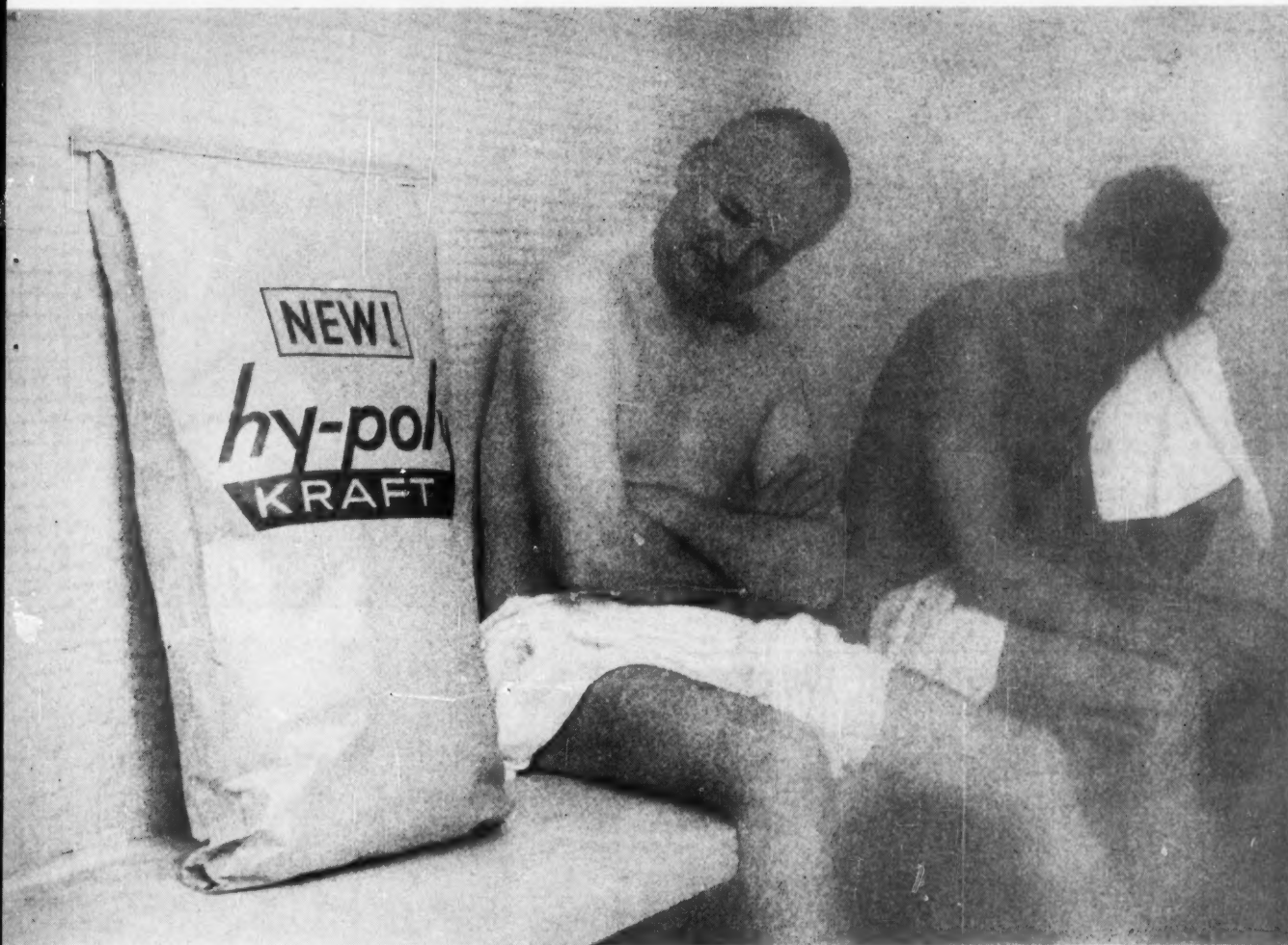
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Now International Paper saves you
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**Read why new humidity-proof "Hy-poly" kraft makes
medium and low-density polyethylene sheets extravagant!**

THE multiwall bag you see taking a Turkish bath in our picture contains calcium chloride.

We steamed this new Bagpak® multiwall in 95% relative humidity at 120° F. for 48 hours. (Unprotected, under these conditions, this chemical takes on 2 ½ times its weight in water in about an hour!)

But when we opened up the bag, the thirsty crystals spilled out as though they had been stored on the Sahara!

And Bagpak's new Hy-poly kraft *saves you money*. You stand to save from \$5 to \$16 per thousand multiwalls!

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Bagpak Division **INTERNATIONAL PAPER** New York 17, N. Y.

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No Obligation
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9-Y White Street, New York 13, N. Y.**

STANDARDS FOR TOW LINE TRUCKS

(Continued)

as received shall be not less than 2,000 psi for molded-on tires. After being subjected to accelerated aging process, the decrease in tensile strength shall not exceed 25 percent. The accelerated aging of rubber shall be conducted at 70° C (158° F.) for 168 hours in air oven process described in Federal Specification ZZ-R-601.

Durometer Hardness:

The hardness of the tread as received shall be 70 points plus or minus 5 points as measured on the face of the tread by the Shore Type A Durometer. After being subjected to the accelerated aging process described above, the hardness shall not increase by more than 10 points.

Adhesion:

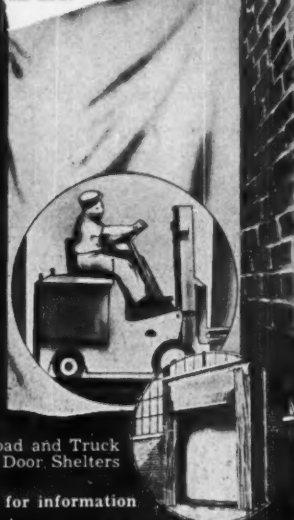
The force necessary to separate the soft tread from its base shall not be less than 50 pounds per inch

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expand by gravity,
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NO RETURN LOOP
Follows any path up, down and around.

IN STOCK
Shipped same day order is received and is ready to install.

VERSATILE
Automatic discharge, accumulation, or transfer to another conveyor.

LOW COST
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They deliver parts, return empty jigs, accumulate parts and carry parts thru heating, cooling, painting, baking, etching, drying.

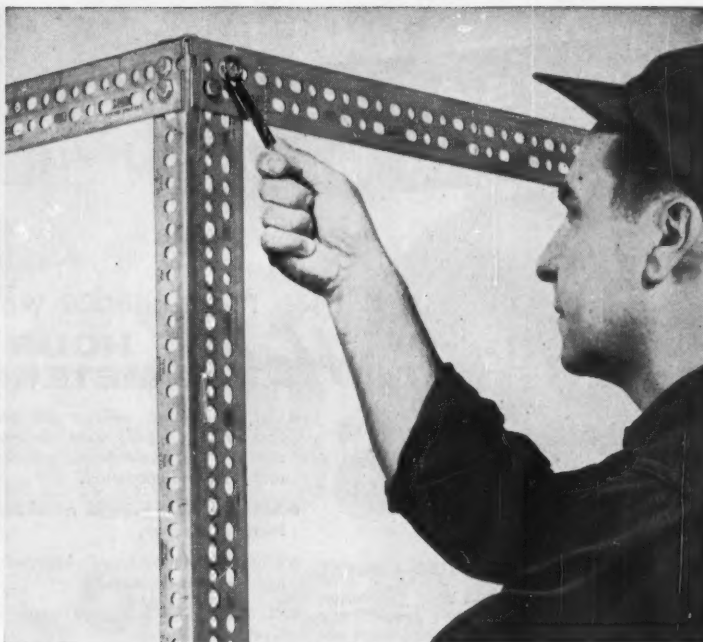
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MATERIAL HANDLING ENGINEERING



Pallet Racks with Catwalk



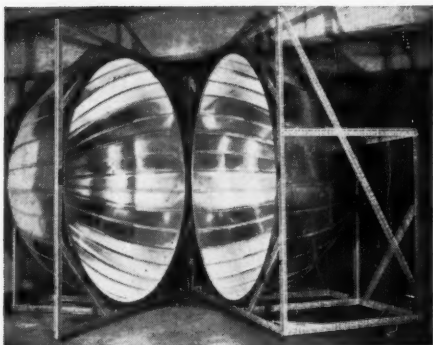
Automobile Display Rack



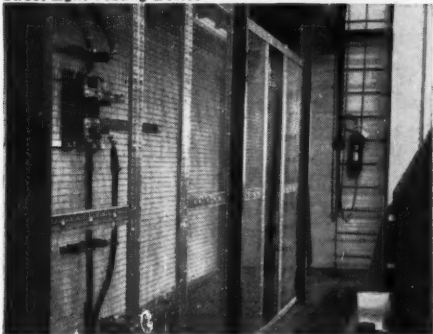
BUILD IT WITH **new**

AIM
BRAND

slotted angle



Street Light Testing Device



Protective Barrier for Electrical Apparatus

The Only Framing Material That Gives You Lock-Joints, Friction-Joints, and $\frac{3}{8}$ " Structural Bolts

Whether you need a common storage frame or an unusual piece of equipment, you can build it faster and more economically with new AIM Brand Slotted Angle. This versatile framing material features a new slot-and-hole bolting pattern that simplifies the assembling of all kinds of durable structures and equipment.

Two bolts fastened through round holes form a Lock-Joint for maximum strength and rigidity. The structural design of mezzanine floors, bar stock racks, etc., permits use of this joint.

Two bolts fastened through slots form a Friction-Joint. This type of joint provides normal rigidity and is used when the structural design of such day-to-day jobs as tables, shelving, etc., permits. $\frac{3}{8}$ " diameter structural bolts, each with a safe-load capacity of 2000 pounds, are used for all connections.

Cold-rolled galvanized steel, AIM Brand Slotted Angle comes in two sizes: Standard 225-80 ($2\frac{1}{4}$ " x $1\frac{1}{2}$ " x .080") and Heavy-duty 300-104 (3 " x $1\frac{1}{2}$ " x .104"). Ten or twelve-foot lengths come in packages of 10 pieces with bolts and nuts.

New AIM Brand Slotted Angle is a product of Acme Steel Company, U. S. pioneers in slotted angle framing material. Available nationally through local distributors or write: Dept. MJD-99, Fabricated Materials Division, Acme Steel Company, 135th Street and Perry Avenue, Chicago 27, Illinois.

**ACME
STEEL**

AIM Brand Slotted Angle

AIM

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SEPTEMBER, 1959

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for down-time!



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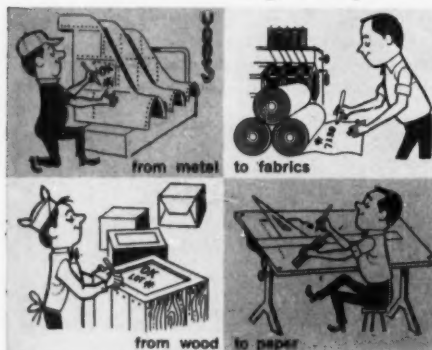
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Refills available

**STANDARDS FOR
TOW LINE TRUCKS**

(Continued)

of tread width at the base of the tread when tested as follows:

Adhesion tests of rubber treads molded to metal shall be conducted at room temperature. The tread shall be cut transversely down to its base. The tread may be trimmed down to the base along the flanges to minimize tearing of the tread. With the wheel supported horizontally on free rotating bearings in a suitable fixture, the tread shall be separated circumferentially from the base (by means of a suitable testing machine exerting a radial pull) at the rate of approximately 6 inches per minute.

After the test, the material shall be pulled off and that remaining on the core shall show no indication of blistering or porosity.

Elongation:

The elongation of the soft rubber

CONVEYORIZED PACKAGING
for Speed • Economy • Uniformity



REMOVABLE
SLIDER BED
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Power Belt Conveyor furnished standard 18", 22", 30" O.A. Widths with 12", 16", 24" belt widths. Length to suit. Used with gravity roller or wheel conveyors — NYLO-Bearings.

Tell us your requirements.
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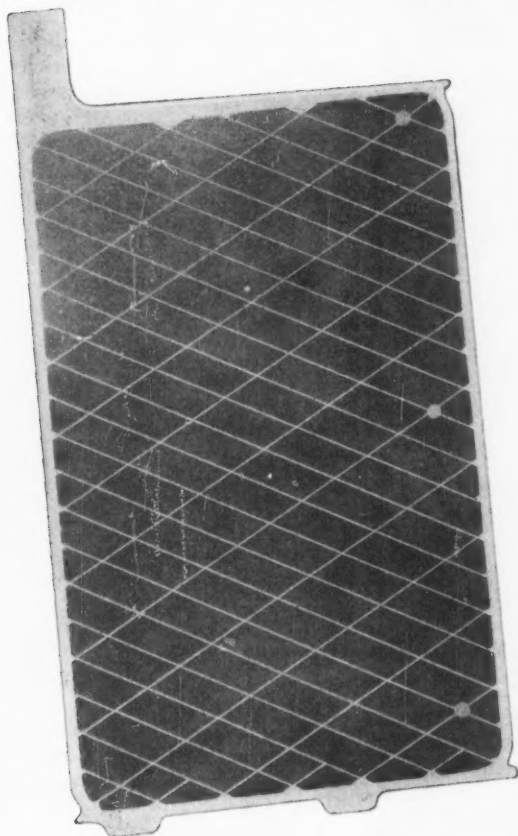
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A vital contribution to motive power batteries, Gould's NEW Silconic Plate prevents grid corrosion, the most common cause of battery failure.

Sound, tested and proved, the principle is simply this: Gould introduces silver and cobalt into active materials of the positive plates. The silver and cobalt migrate to—and collect on—positive grid members, forming an insoluble oxide surface impervious to acid and oxygen attack. The longer the battery operates, the deeper the silver-cobalt penetrates into the grid metal, thus greatly prolonging life. In applications where batteries are idle for periods of time, Gould's Silconic Plate prevents migration of materials to the negative plate, effectively reducing self-discharge within the cell.

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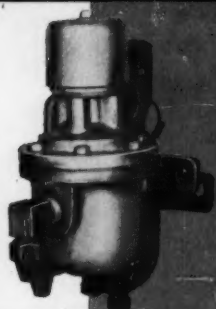
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The ultimate in filtering action is guaranteed with the exclusive Century triple action chamois-felt-screen system. These fuel locks require only one simple installation procedure. Full range from only two basic models for all type engines.



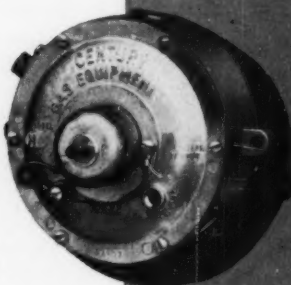
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CENTURY GAS EQUIPMENT
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Decatur, Illinois

STANDARDS FOR TOW LINE TRUCKS

(Continued)

treads as received shall be not less than 250 percent. After being subjected to the oven test, as described in "Tensile Strength" above, the decrease in elongation shall not exceed 25 percent.

Compression Set:

The permanent set under a deflection of 25 percent of the original thickness of the test specimen, shall not be more than 50 percent. Tests shall be conducted according to Federal Specification.

2.3.2.2 Demountable rubber Tired Wheels

Wheel Requirements

Construction:

(Definite specifications have not yet been formulated but the physical characteristics of the tire and the basic wheel material or construction will be similar to the standards outlined in the previous paragraphs. As the name implies, the tire will be demountable or replaceable by using split rim construction or side plates or discs bolted together to support the tire.)

2.3.2.3 Metal Industrial Wheels per CFTMA Standard CFT-W2-56

These wheels, also known as semi-steel, alloy or pressed steel type, are commonly used on four-wheel hand powered industrial trucks, four-wheel trailer-type industrial trucks, two-wheel hand trucks, and in casters, conveyors, or any type of industrial or movable equipment wherein loads and speeds are within the specified limits.

Wheel Requirements

Construction:

The metal wheel casting or stamping shall consist of a good grade of semi-steel, malleable iron, aluminum, or sheet steel, designed to give sufficient strength to resist shock impacts with a good factor of safety, according to the specification for maximum operational load rating and speed.

2.3.2.4 Plastic Industrial

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INSURE SAFETY OF

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Even fine bulk materials can be handled with the assurance that the recognized advantages of Youngstown top loading and bottom unloading containers will be retained.

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SEPTEMBER, 1959

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*On Inclines
to 40°*



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has a tough, diamond-pattern, non-slip surface that keeps packages of all kinds firmly in place while being carried on incline conveyors angled up to 40°. Used for handling heavy cartons, boxes, baskets, bags, cans, etc., with the consistent reliability that means lower conveying costs. Widths up to 44".

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STANDARDS FOR TOW LINE TRUCKS

(Continued)

wheels per CFTMA Standard CFT-W3-56

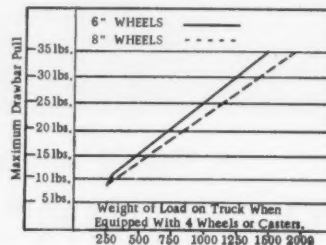
These wheels can be used on four-wheel hand powered industrial trucks, four wheel trailer-type industrial trucks, two wheel hand trucks, and in casters, conveyors, and any type of industrial or movable equipment wherein loads and speeds are within specified limits. They are suited for installations that are exposed to dilute solutions of organic acids, but are not recommended for (1) rough outdoor service over cobblestones, car tracks, cinders, or similar surfaces; (2) factory service over diamond grid floor plates, steel mesh or floor of like character; (3) use as friction wheel drives or as drive wheels on industrial trucks; (4) exposure to alkali.

Wheel Requirements Construction:

The approved plastic wheel shall be designed and fabricated from materials of sufficient strength to withstand high static loads and reasonable high shock resistance under recommended loads and speeds.

2.4 Drawbar Pull.

The caster and wheel equipment shall comply with and be capable of meeting the recommended drawbar pull requirements as shown on the chart below as maximum for this equipment when mounted on four casters. The pull shall be in a horizontal direction and applied while the equipment is under a variable load from 250 to 2,000 pounds. The surface on



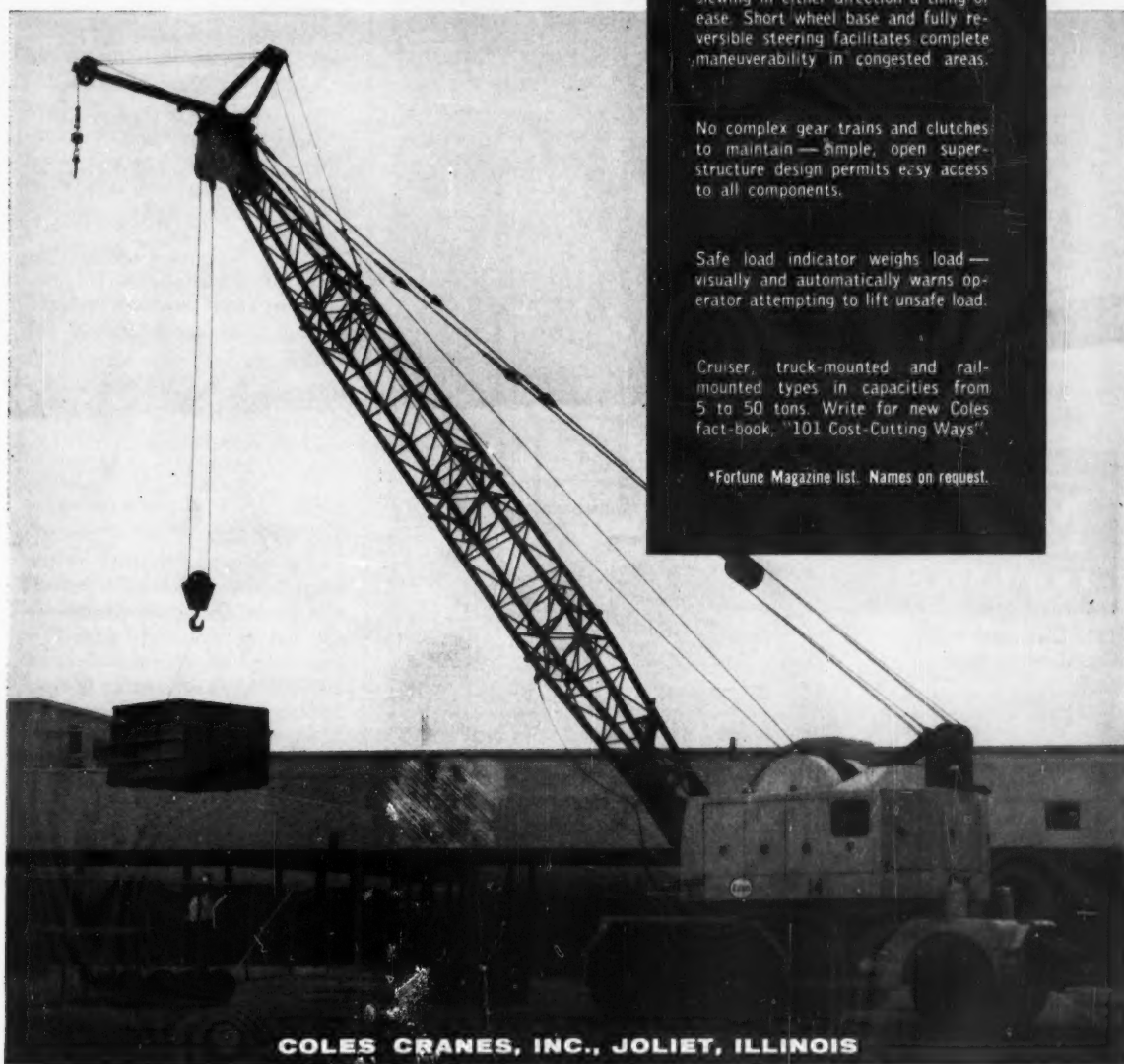
which the test is conducted shall be smooth concrete with no rises or depressions exceeding $\frac{1}{16}$ inch from a straight line over a linear

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17½ ton Coles crane operating at the Baton Rouge Refinery of Esso Standard Oil Company



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Diesel-Electric Powered to give operator positive, accurate, yet simple "finger-tip" control for hoisting, derricking, slewing and traveling.

Each crane motion has its own electric motor and electro-mechanical brakes — no gears to shift — no clutches to slip.

Fully-automatic braking on all crane motions, controlled lowering under power at all times.

Short tail superstructure makes 360° slewing in either direction a thing of ease. Short wheel base and fully reversible steering facilitates complete maneuverability in congested areas.

No complex gear trains and clutches to maintain — simple, open superstructure design permits easy access to all components.

Safe load indicator weighs load — visually and automatically warns operator attempting to lift unsafe load.

Cruiser, truck-mounted and rail-mounted types in capacities from 5 to 50 tons. Write for new Coles fact-book, "101 Cost-Cutting Ways".

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8022-MF

STANDARDS FOR TOW LINE TRUCKS

(Continued)

distance of 3 feet at any point in the test area.

2.5 Lubrication.

The following specifications define lubricants commonly referred to as Multi-purpose type. They are generally suitable for temperatures from -10°F to $+200^{\circ}\text{F}$ or higher. Where temperatures substantially below or above these limits are encountered, special products may be required, for which consult your lubricant supplier.

Type of product—Lithium base grease

Penetration—worked at 77°F —260/320

Consistency—Smooth

Soap content—6 percent minimum

Viscosity of mineral oil at 100°F —500/1000 SUS

Dropping point, ASTM— 325°F minimum

Oxidation stability ASTM oxidation bomb method—pressure drop after 100 hours—10 psi max.

Multi-purpose lubricants differing in minor degree from these specifications may be equally satisfactory.

Note: Above as recommended by American Petroleum Institute.

Grease seals are optional on the wheel bearings and on the caster swivel bearings. Grease fittings are optional on such sealed casters or wheels depending upon the type of seal and the recommended method of proper bearing maintenance.

2.6 Racks (or Superstructure)

A rack having an inverted "U" frame of no less than $2 \times 1\frac{1}{2} \times \frac{3}{16}$ inch steel angles shall be welded permanently to the cart body on the swivel caster end of the cart. The rack frame is to be 40 inches high above the cart platform with an auxiliary push handle mounted approximately 38 inches above the floor. The auxiliary push handle to extend approximately 4 inches out from the rack uprights. The rack is to be

equipped with a minimum of three horizontal and/or vertical slats welded to the rack frame and/or truck frame, and to each other. (Optional rack of other material permitted providing that it meets dimensional and strength requirements.)

2.7 Blackboard.

A sheet metal blackboard, approximate size 9 x 10 inches or larger, finished with special blackboard paint is welded to the end rack at the most convenient location. The bottom edge of the blackboard may be turned up to provide a trough or holder for chalk.

2.8 Bill holder.

A cylindrical bill holder approximately 2 inches in diameter and 5 inches in minimum length perforated for visibility and with the bottom end closed except for a small hole to permit easy cleaning of any debris is welded to the rack uprights on either side and at the most convenient height. A box type bill holder approximately 6 x 9 x 3/4 inch wide is also permissible.

2.9 Underfloor Tow Pin.

The underfloor tow pin assembly attached to the above trucks has a minimum of 3/4 inch diameter round steel tow pin of 100,000 psi tensile strength with at least the lower 2 inches of the pin hardened to 56 Rockwell "C" Scale.

The pin is to be protected and guided by a housing welded to the truck frame and extending to no less than 2 inches above the floor. The housing is to be suitably braced with a heavy member running diagonally from the back edge of the front channel end frame member downward to a point near the bottom of the housing. This diagonal brace is welded to both the end frame and the housing. The pin has a control to lift the pin to a secured raised position no less than 2 inches above the floor when the truck is detached from the conveyor. The control also permits a single drop release into the conveyor slot for attaching the truck to the conveyor. This pin control, pin and housing unit is constructed so that the tow pin will always be free to ro-

Nutting

shows you
"HOW"...

to save up to **\$5.00** on each
floor truck wheel replacement!



Nutting
"Free Wheeling" Demountable
Rubber Tired Wheels

RMD Type — Regular and medium heavy duty. Diameters — 4" through 18". Capacity range — 250 lbs. through 1250 lbs. per wheel.

RHD Type — Heavy and extra heavy duty. Diameters — 6" through 18". Capacity range — 550 lbs. through 1800 lbs. per wheel.

The world's only complete line of demountable rubber tired wheels!

There are 2 good reasons why it makes good sense to equip all your floor trucks and trailers with Nutting Demountable rubber tired wheels. *First*, you save costly downtime because tires can be replaced in minutes, on-the-job. *Second*, you can save up to \$5.00 on each tire replacement over the cost of complete molded-on wheels. In most cases—even complete wheel costs are less with Nutting Demountables. (See chart below.) Multiply those savings by the number of replacement tires or wheels your company buys each year and you'll see why more than ever Nutting is your best, and most economical buy!

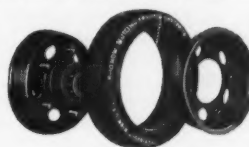
* Nutting Demountable		* Molded-on Rubber Tired Wheel			
Complete Wheel	Tire Only	Brand A	Brand B	Brand C	Brand D
\$5.35	\$3.25	\$8.25	\$6.30	\$7.60	\$4.40

* 6" diameter wheel in normal purchase quantities.

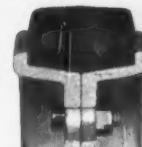
NUTTING DEMOUNTABLES SAVE TIME—MONEY—GIVE BETTER SERVICE!



1. Socket, box or offset open end wrench loosens nuts and bolts.



2. Hub, rim and tire are separated and reassembled with new tire in seconds.



3. No stretch, no creep with exclusive Nutting rim and tough fibre base design.

25% Easier Starting and Rolling — Nutting demountables are made with a special rubber compound called Formula "N". Formula "N" gives you longer wear plus 25% easier rolling than ordinary tires. For complete money saving facts about Nutting demountables, send for your free copy of Bulletin "D".

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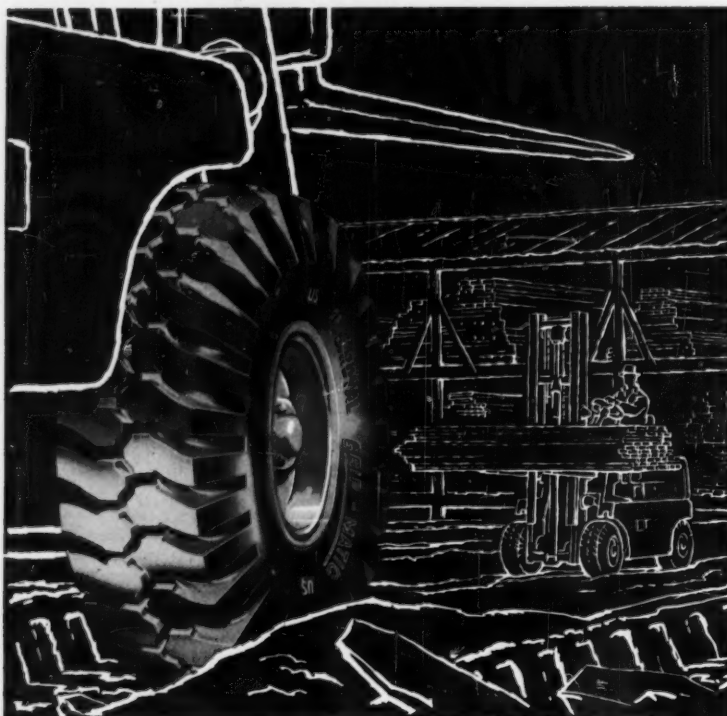
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Please send copy of Bulletin "D".

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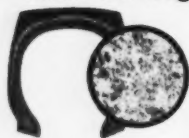
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Here's S.R.T. in X-ray photo—a thick layer of rubber containing thousands of short steel filaments. They form a virtually impenetrable mat between tread and body, exclusive tread and sidewall protection against cuts, ruptures... means less vehicle downtime, increased tire life, reduced tire repairs.

Along with S.R.T., the Grip-Matic's All-Surface Traction Tread gives sure grip on slick surfaces, ramps, yard areas. Better buy—and specify—U.S. Royal!

Write W. J. Shalley, Industrial Tire Dept., for complete industrial tire manual.

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STANDARDS FOR TOW LINE TRUCKS

(Continued)

tate without restriction or binding. The extension of the tow pin into the floor conveyor meets the specifications of the individual conveyor manufacturers. Neither the pin nor housing should be painted or heavily greased. A very light film of oil or kerosene is recommended to prevent corrosion and to provide lubrication.

This is an optional feature that can be omitted for manual cart installations.

2.10 Overhead Conveyor Connections.

For overhead chain conveyors the carts may be equipped with chain and hook assemblies welded to rack uprights for attaching carts to rings projecting downward from conveyors. Telescopic, vertical masts with hooks at the top may be desirable where minimum travel space or narrow aisles are a problem. Other fittings on the conveyor may require masts without hooks or permit rigid masts, but these are generally special designs. Standardization may follow. This is an optional feature that can be omitted for manual cart installations.

3. AUXILIARY PLATFORM

3.1 Construction and specifications are identical to basic carts except without racks and without the rigid casters at the one end. The end of the auxiliary platform opposite the end upon which the swivel casters are installed is equipped with hooks or round pins on 30 inch centers to fit into pockets or slots in the rear end of the basic cart in such a way that both decks will be on the same level. Such hooks or pins are a minimum $\frac{5}{8}$ inch in diameter and 2 inches in length or equivalent in strength.

3.2 Carts requiring auxiliary platforms are to have pockets to accommodate the pins on the auxiliary platform. The inside diameter of the pockets is to be large enough to permit some articulated movement over uneven surfaces and up loading ramps when the

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auxiliary platforms are attached to the carts.

4. ASSEMBLY

The design assembly which will provide the easiest removal and replacement of all parts subject to wear is recommended for low replacement and maintenance cost.

5. FINISH

The top surface of the wood deck shall be finished with a good grade oil or other wood preservative. All exposed metal surfaces have to be cleaned of weld slag or splatter — including the grinding of any sharp edges or rough areas — and then finished with a good grade of enamel or lacquer. Caster and wheel metal parts may have a plated finish such as cadmium plate or zinc plate.

6. LOAD CAPACITY

Because of the heavy and constant service of equipment of this type, the truck exclusive of the running gear should be adequate for load capacities of 2000 pounds or more with an adequate safety factor. The maximum load capacity with rubber tired wheels, size 6 x 2 inches, is 1640 pounds; 2000 pounds with 8 x 2 inch rubber tired wheels. These capacities are based upon the CFTMA Standard #CFT-W1-56 covering molded-on industrial wheel standards (rubber tired wheels).

7. SEAL OF COMPLIANCE

Manufacturers of this equipment will indicate when their equipment is equal or superior to these standards by affixing a standard seal as shown below on each cart.



This seal has been approved by the Operations Committee of the Regular Common Carriers' Conference and the Towline Truck Standards Committee of the Caster & Floor Truck Manufacturers Association. (Seal and label copyright 1958—CFTMA)

These standard specifications were developed under the auspices of CFTMA, and were voluntarily established by mutual consent of those concerned. These specifications are advisory only and their use or adaptation is entirely voluntary. The users of the specifications are wholly responsible for protecting themselves against all liabilities for patent infringement.

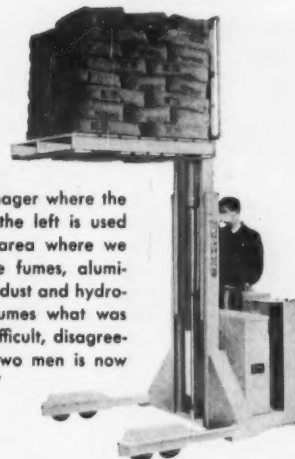
EXPLOSION PROOF CLASS I GROUP D POWERED LIFT TRUCKS



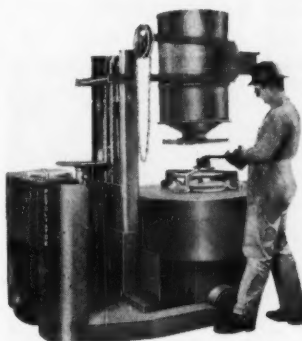
APPROVED and PROVEN

8 YEARS
ON THE JOB

Since 1951 Revolvator Go-Getters, designed for this service, have been specifically approved by leading industrial insurance companies for use in Class I Group D explosion hazardous areas in major plants from coast to coast. User comments like those below show that the Go-Getter has been more than approved by safety authorities... it has been proven in use for eight years.

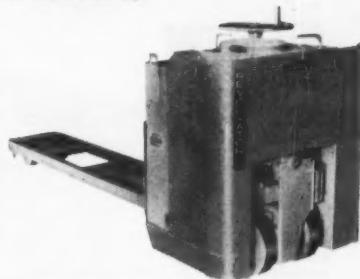


The Plant Manager where the Go-Getter at the left is used says, "In an area where we have explosive fumes, aluminum chloride dust and hydrochloric acid fumes what was previously a difficult, disagreeable job for two men is now easy for one."



Air in the color mixing room of the finishing plant where the Go-Getter above is used carries organic dusts as well as explosive fumes. The foreman says, "The men like the Go-Getter and use it steadily."

Executives in the chemical plant where the model to the right is used say, "We use the Go-Getter in our area which has the most severe hazard." Another plant where quantities of explosive solvents are used for "wash down" reports of a similar model, "We are well pleased and we are ordering another Go-Getter."



A major insurance association writes, "We are quite willing to accept the unit (Go-Getter) as it is designed with explosion proof housings for the motors and controls as usually specified for electrical equipment that can be safely used in explosion hazardous areas."

A nationally known safety engineer writes, "... calling the existence of this line of trucks to the attention of the industry as we believe many would want to know about this equipment."

The Go-Getter is the latest addition to a complete line of materials handling equipment for use in explosion hazardous areas that Revolvator has been building for over a quarter of a century.

REVOLVATOR CO.

8739 TONNELE AVENUE, NORTH BERGEN, N. J.

SINCE 1904

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NEVER IDLE TRACTOR

(Continued from page 73)

more than a fraction of an inch. Should something force it off its path, it stops immediately.

An anti-crash mechanism is built into the bumper. It makes the tractor stop instantly if it hits anything. A beacon receiver on the tractor further regulates the distances between trains. Each tractor is equipped with a ramp-sensing relay that increases power when ascending grades, and de-

creases it when descending. While the tractor is moving a rotating red signal light warns of its approach.

Radio Controlled Tractors

Another form of automation in tractor trailer operations is met by radio controlled tractors. This remote control system consists basically of two simple units: the transistorized transmitter which is worn on the operator's belt. And the compact receiver which is mounted on the tractor.

The operator, by pushing buttons, can send control signals to the receiver. It then actuates the tractor. This simple control system can be installed wherever you need positive control over distances of 500 feet, or any distance by special order.

Tires

They're important for tractor efficiency. They may be pneumatic, solid, or cushion types. Fragile loads usually are carried on pneumatic tires. Trailers have been built with rubber cushion tires to handle loads of 30 tons. A neoprene tire finds favor in food storage and processing plants because of its brine resistance. Conductive rubber tires are widely used where there is danger of explosion from sparking, as in bakeries, power plants, flour plants. Acid-resistant tires are used to a great extent in chemical processing plants. Among points to consider in selecting proper tires are load weights, fragility of the material being moved, wear on floors, and what maintenance will be necessary.

Drawbar Pull

In determining what size tractor to use, first consider the load to be towed, the rolling resistance of the load on level surface, grades to be climbed, grade resistance, operating surface, weather, altitude, round trip distance, and speed desired.

There are two ways you can use to determine drawbar pull. The military uses a figure of 10 to 1 for selecting tractors. For example: if a load weighing 100,000 pounds is to be towed on trailers, then the drawbar pull of the tractor would be 10,000 pounds. This drawbar pull is defined as the push or the pull that it takes the tractor to overcome frictional resistance between the wheels and surface of the floor in order to move the train. This method allows for grades, weather, and speed, but some companies consider this method too conservative for most industrial applications. They follow this rule of thumb method: Rolling resistance on level concrete is 40 to 50 lb. per ton. Grade resistance is 10 lb.



• • • • •
**warehouse
order
picking
speeded...**
• • • • •



• by NEW • A-F Engineered • Double Deck Conveying System

From Humiston-Keeling & Company's Chicago warehouse, a large number of small orders are sent, throughout the day, to retailers in all parts of the city.

To speed up the work of the order pickers and to keep merchandise flowing to the shipping platform at the proper speed for most efficient truck loading, this A-F Double Deck, 3-Lane Conveying System was engineered.

It makes for more accuracy by

the order pickers, less lost motion, less lost time at the shipping platform and greatly increased employee enthusiasm and loyalty.

YOUR products handling and package handling problem may be vastly different, but whatever it is, discuss it with us. We founded the package conveyor business in 1901 and have made sensational savings for all types of companies ever since. Write for new bulletins—today!



A-F ENGINEERED CONVEYING SYSTEMS

Also Pre-Engineered Conveyors—
Wheel, Trolley, Roller, Belt
Metal Cleaning and Processing Machines

THE ALVEY-FERGUSON CO. • 437 Disney St., • CINCINNATI 9, OHIO

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per 1,000 lb. per 1% grade. The traction coefficients are: dry concrete 0.75 to 0.9; wet concrete 0.4 to 0.6; ice, 0.05 to 0.1.

It should be noted that tractors used in today's industrial applications are in most cases rated at a 0.9 traction coefficient. For this reason, it is very important that this condition be considered.

Tractor Applications

Present day tractors are used in an ever-increasing range of applications. Here are a few case histories to show how industry uses them to increase production, and save time and money.

They use five electric powered tractors at the 25-acre warehouse of Eaton's of Canada. They're capable of 2,000 lb. drawbar pull, and were ordered specifically to provide horizontal movement of loads on trailers for long hauls.

Merchandise delivered by tractor-train is loaded on the shelves by electric fork truck. Most incoming material is palletized at the dock. Loaded pallets are placed on trailers by fork truck and the electric tractors tow 10 to 12 trailers at a time to proper storage area. Merchandise delivered by tractor trailer trains is loaded on the shelves by electric fork truck. Eaton says that not only is their cost of operation lower, but they can do their necessary handling jobs with fewer total trucks, because the fork trucks are not tied up with long hauls handling only one load at a time.

Tractors Tow Planes

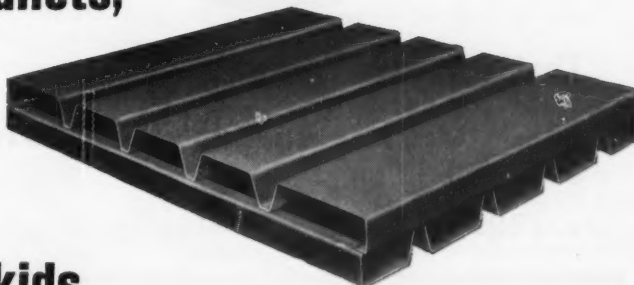
At the International Airport, Idlewild, N. Y., heavy duty tractors tow heavy planes. The same tractors, by the way, can be used to spot railroad freight cars, and to haul trailers in inter-plant transport. Designed to facilitate plane-handling, they can crawl an airliner a fraction of an inch, or pull a 300,000 lb. airplane at a speed of 10 mph. Full time power steering and short turning radius permit easy nestling of airliners in tight spots. They have air-over hydraulic power brakes, sure-grip parking brakes, unlimited operator visibility, powerful head and tail lights, directional signals, stop lights, blinking warn-

LOOK TO UNION METAL

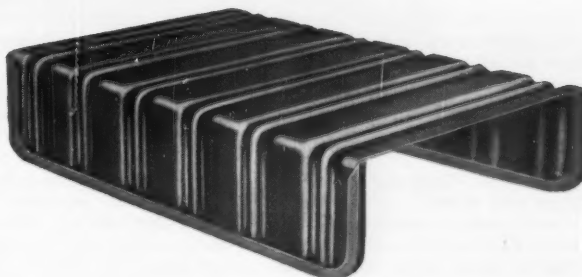
for boxes,



pallets,



skids



Detailed information covering advantages, features and complete range of designs is readily available.

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UNION METAL

Material Handling Equipment

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NEVER IDLE TRACTOR

(Continued)

ing lights and reflectors for night work.

Handling has been speeded 75 percent at Young Market Co.'s new Los Angeles warehouse, one of the three largest liquor wholesalers in the world. In its planned material handling system, electric trucks were tailored to the job. Electric walkie trucks remove palletized loads from incoming carriers, carry them inside the ware-

house. The trucks are operated from a control handle while walking along with them. They also have an operating platform which enables the driver to operate his unit while riding if he so desires.

The tractor-trailer train drops off trailers as it travels through the stock area. Tractors also haul trailers to the shipping area from the stock area, in groups of 5 or more trailers at a time. This efficient handling system enables Young to offer its customers one day delivery as standard. Young smoothly receives and ships some

1½ to 2 million cases of liquor a year.

Mattresses and Rugs Easily Transported

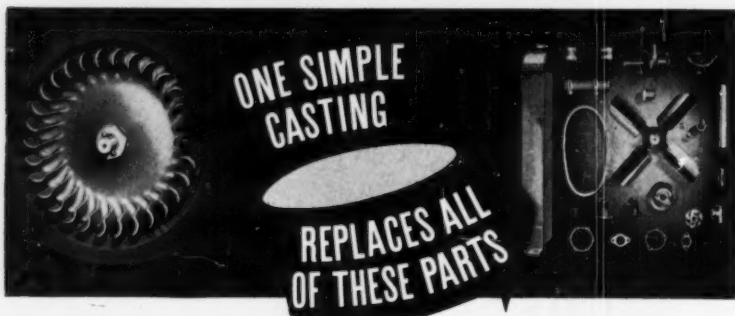
The Jordan Marsh Co. is a 5-level warehouse in Auburndale, Mass. Its 500,000 sq. ft. of storage is used for furniture, appliances, rugs, and other bulky, heavy goods. Included in its handling equipment are four hundred 4-wheel trailers, and 4 tractors. All goods received by boxcar or highway trailer truck on Level 3. They load furniture manually loaded on the trailers inside the boxcar or at the truck's tailgate. Everything is placed directly on the trailer's deck. When loaded, the trailers are manually made up into a train, 5 to 7 trailers per train. And the tractor takes the trailer train to the proper storage level. Because of the building's split level arrangement, the train is required to go up or down only a maximum of two half floors.

Mattresses, a particularly difficult item to handle, are stored in special mattress storage racks on the third floor. They're manually packed in trailers (12 mattresses per trailer) at the tailgate of incoming trucks. These trailers are made up into trains, and are hauled to the storage rack area. Like the mattresses, heavy rugs are also handled by trailer trains.

Handling Costs Slashed

Cost of handling dropped 50 percent at Bigelow-Sanford Carpet Co., Inc. of Thompsonville, Conn. The savings were the result of a special program. As an example, four rolls of seamless carpet weighing 2,300 pounds go up a steep ramp between departments. A powerful tractor moves this heavy load as easily the old method moved a single roll. In another handling system, a fork truck pulls six loaded dollies, and at the same time carries another full load on its forks. They used to push the trucks manually, one at a time. This increased the volume being handled 300 percent. The dollies hook on to each other, and the leader is coupled to the truck.

Containerized loads are speeded for transport by industrial



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WISCONSIN air-cooled ENGINES
give you longer service
...require the least care!

When it comes to dependable, care-free power, a water-cooled engine does not belong in the same league — much less the same park — as a Wisconsin air-cooled engine. The one-piece flywheel-fan casting helps show why.

Air-cooling eliminates up to 26 parts used in water-cooled engines — and packs the same power in a smaller and up to one-third lighter engine. Being more compact, an air-cooled engine has much better resistance to rough handling.

You don't have to worry about dry-ups, freeze-ups, water, and anti-freeze — nor overheating caused by rust, scale, or leakage in the cooling system. You save the initial and upkeep cost of radiators, water pumps, fan belts, hose lines,

and other parts which can cause an ill-timed power failure and/or shutdown due to wear or neglect.

With water-cooled engines, your problems begin both at extremely low and high temperatures. So why buy trouble when you can eliminate all these problems by specifying Wisconsin air-cooled engines. They start fast and work dependably in temperatures ranging from sub-zero up to 140° F.

Insist on Wisconsin air-cooled engines on your material-handling equipment. Sizes 3 to 56 hp . . . 4-cycle single-, two-, and V-type four-cylinder models. All are available with electric starting and can be equipped to burn gasoline, natural gas, or LPG fuel. Write for Bulletin S-237.



WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN

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tractors for the White Pass & Yukon Route, Vancouver, B.C. The tractors are used to tow steel trailer carts from warehouse to shipside. There the ship's gear takes the containers aboard. The ship, a 4,000-ton freighter, accommodates about 175 steel containers in its hold, plus 2,500 tons of palletized and unpalletized cargo a trip. Because of the container method of freight handling, merchandise from Vancouver can be delivered to the Yukon in 5 days. It used to take them 10.

Lift Trucks and Tractors Speed Loading

The story of Philadelphia Piers, Inc. is one of a fleet of 20 fork lift trucks and 22 tractors increasing tonnage per man-hour and reducing costs. The company handles tons of commodities from all over the world. They strive for lowest cost per man-hour, while maintaining a smooth flow of production from dockside to storage to carrier. Bags of cocoa beans, weighing 140 pounds each, are loaded by hand onto trailers. They're made into trains and drawn by tractor to an elevator to be lowered to pier level. There, they are loaded onto special inverted pallets of 15-bag drafts, and are lifted and transported to freight cars. This is one example of how they increased production, and at the same time, speeded loading.

Many industries use platform trucks with various types of couplers. One company reports that one of its models with a torque converter drive has especially smooth towing characteristics, and that it is good for intermittent towing and hauling where a tow truck cannot be utilized to full-time advantage. The company reports a growing interest in this type of versatility.

Photos and data courtesy of Barrett-Cravens Co., J. I. Case Co., Clark Equipment Co., The Elwell-Parker Electric Co., Lewis-Shepard Products, Inc., The Mercury Mfg. Co., The Oliver Corp., The Prime-Mover Co., Silent Hoist & Crane Co., Towmotor Corp., and The Yale & Towne Mfg. Co.

WHAT IS THE TREND IN HOISTS?

See page 139

SEPTEMBER, 1959



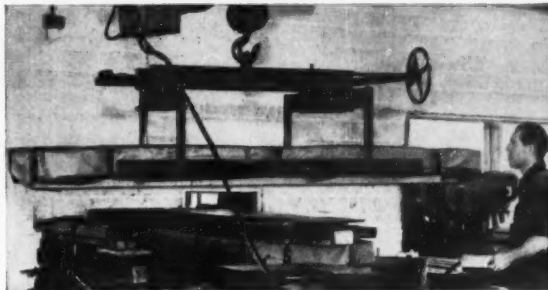
MANSAYER GRABS

Handle Millions of Tons in Your Industry



Unload Trailer Trucks 7½ Times Faster!

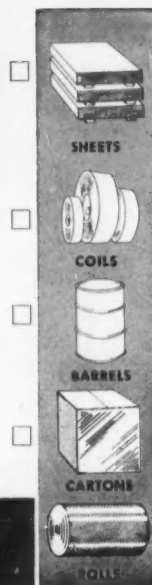
The Mansaver Style 1142 sheet grab shown above unloads truck and trailer in twenty minutes instead of 3½ hours using previous method. The advantages of aerial handling are evident: it is not necessary to park truck level with platform; loads can be carried over obstacles and directly into storage if desired; no strain on men; no risk to materials, and reduced waste.



Double Steel Stock Without Increasing Storage Space!

Before installing electric hoists and two-way bridge crane and Mansaver grab, serving the entire length and width of the steel storage room, the company employing this system of handling never thought of stocking more than 250 to 300 tons at a time. Now they carry 750 to 800 tons. In addition, handling man-hours were cut in half.

CHECK ITEMS YOU HANDLE SEND FOR LITERATURE AND MORE INFORMATION



MANSAYER INDUSTRIES, INC.

3103 East St., New Haven, Conn.

Also Manufactured in England

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PNEUMATIC CONVEYING

(Continued from page 69)

systems that move material through long lines.

Air may move in an open or closed circuit. You need a continuous supply of clean air for open, or exhaust, systems. And sometimes you'll need a filter at the intake. In a closed system the air is recirculated continuously.

Material feeders—You may feed material continuously, semi-continuously, or in batches. There

are many modifications and combinations of equipment designed for this job, so any classification of components is somewhat arbitrary.

The blow tank may be regarded as a special type of batch feeder. Its pressure range is usually between 50 and 125 psi. It's best where distance, capacity, or other factors call for high pressure.

A blow tank used to convey cement in the construction of Grand Coulee Dam moved 200 tons an hour through 7,600 feet, including a vertical component of

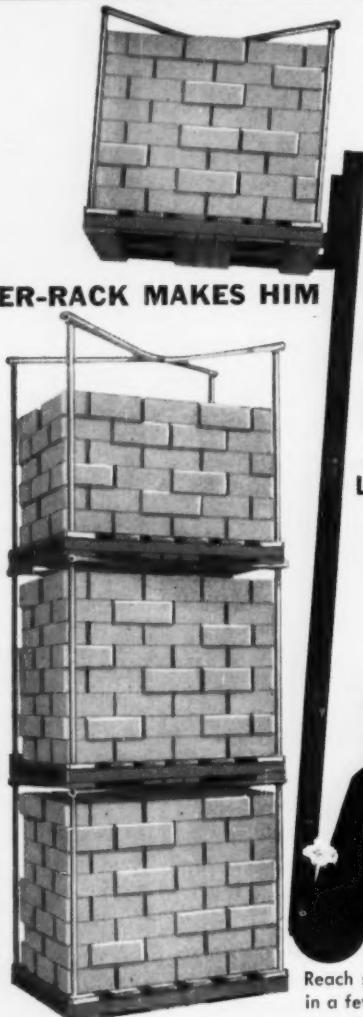
several hundred feet. Sometimes blow tanks are paired and the feed-discharge cycle timed by automatic controls to feed almost continuously.

The semicontinuous feeder has two compartments, one above the other. A measured batch is received into the upper compartment and dumped through a gate into the lower compartment. While the gate between the two compartments is closed, the load in the lower compartment is discharged and the next batch is received into the upper compartment. As the operation is speeded, the effect is that of continuous feed.

Continuous feeders include the rotary positive air-lock feeder, the solids pump, the open type air-activated gravity conveyor, the fluidized material feeder, and a new low pressure tank and pump combination.

The rotary positive air-lock feeder seals off successive quantities of air and material falling through a chute; vanes rotating on a horizontal axis form compartments (like a paddle wheel) that envelop the material. As the feeder turns, material is dumped out at the bottom. Delivery is, in effect, continuous. Initial cost is low; maintenance is simple and inexpensive. However for abrasive material you need special vanes. Usually pressure is limited to about 18 psi, because it is necessary to maintain a positive air seal between the material inlet and the transporting air. And this is limited by the ability of the air lock to maintain a seal against the conveying line pressure.

The solids pump delivers a uniform flow of material into a compression chamber. It has an impeller screw that operates against a pressure gate. Material is discharged from the compression chamber because of a pressure drop between the feeder and the terminal or some intermediate point in the line. As in the rotary air-lock feeder, the capacity to handle material under pressure is limited by the ability of the feeder to maintain a positive seal against line pressure. However, the solids pump has a material seal and line pressures of 15 to 35 psi are not uncommon. Capacities range up to 200 tons an hour. On one job



A QUICK-CHANGE ARTIST


... He Alters Your Layout in Minutes

Reach solid-stowed or high-tiered items in a few quick moves... change your storage setup in a hurry... when you use portable Tier-Rack pallet stacking frames.

Put idle aisles and empty air space to work, too... gain up to 50% more storage room in your present floor area.

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PALLET STACKING FRAMES

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and Pats. Pending

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a solids pump delivered material to ships through a 3,600-foot pipe. It is not uncommon to deliver material to several silos through 1,000 feet of small diameter pipe. Automatic valves divert the flow from one silo to another. With the solids pump you can maintain capacity regardless of the horizontal and vertical distance. Adaptation to variations in the rate of feed is automatic. Little extra power is needed for increased loads.

The open-type air-actuated gravity conveyor, used as a feeder, is similar to the closed type used as a line conveyor. Both have trough-like air chambers with airtight bottoms and side walls. The top is covered by an air-permeable membrane. In the open type the membrane forms the bottom of a bin, while in the enclosed type the membrane is a horizontal partition inside a closed conduit.

Here's how air-gravity conveyors work: Air admitted into the lower chamber filters up through the membrane and fluidizes the material above it. The membrane (along with the conveyor) slopes slightly toward the delivery point. Fluidization reduces the material's angle of repose so that it flows down.

Air-gravity conveyors easily handle corrosive and abrasive material. Degradation of material is minimized since there is little contact between equipment and moving material. There are no moving parts; flow is controlled by the introduction of air. Since the angle of repose of nonfluidized material exceeds the slope of the membrane, the flow can be stopped instantaneously by starting or stopping the air. These systems are commonly used in discharging cement from a ship's hold, material from bulk railroad cars, and soda ash, fine granulated sugar, flour, and certain resins from trucks.

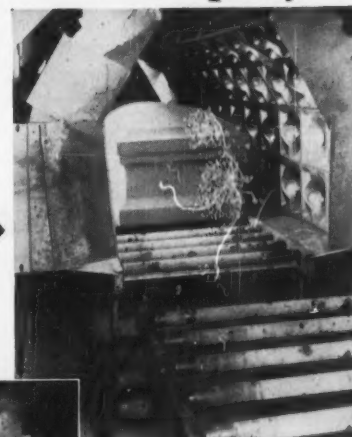
The fluidized material feeder is another adaption of the air-gravity conveyor. Material from hoppers bins is fluidized and carried by gravity through an adjustable gate. Material flow past the gate is closely controlled by an air supply independent of that used for the hopper. Typical application: Twin fluidized feeders discharge the hopper of a 400-barrel cement storage bin to closed

OLSON CONVEYORS Eliminate In-Process "BOTTLENECKS"

At Elgin Metal Casket Company

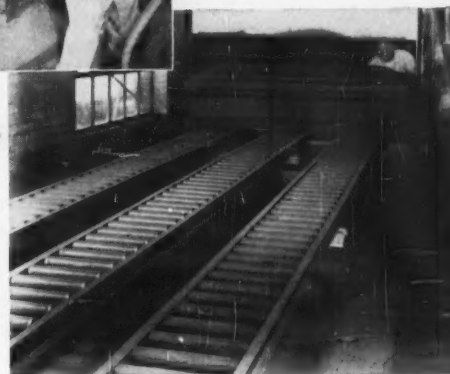
Caskets glide swiftly and smoothly on Olson Roller Conveyors. From initial welding through and between prime coat and inspection operations, in-process work no longer stacks up. This Olson installation is paying for itself.

Casket passing through infra-red drying oven on Olson Roller Conveyor following cleansing bath. Nearly 800 feet of Olson Conveyors are used by this Elgin, Illinois firm—one of the nation's leading manufacturers of high quality metal caskets.



In the spray booth, Olson pneumatic turntable raises casket free of the main roller conveyor. This permits operator to spray all surfaces from one position. Olson Roller Conveyor Turntables are ideal for transfer between conveyor lines, assembly or inspection of bulky units.

Casket leaves spray booth. Set of three parallel Olson Roller Conveyors double as temporary storage awaiting final finishing operations. Elgin Metal Casket Company sustains only preventive maintenance on its Olson Conveyors.



Olson Conveyors and material handling equipment can do a similar, profitable job in your plant—with guaranteed performance at low cost.

Specify

OLSON CONVEYORS

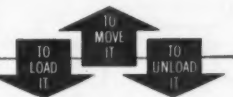
Manufactured by SAMUEL OLSON MFG. CO., INC.

2426 Bloomingdale Avenue

Chicago 47, Illinois

DIVISION OF CHERRY-BURRELL CORPORATION

Write for Bulletin on Olson Time-Saving, Money-Making Conveyors



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PNEUMATIC CONVEYING

(Continued)

type air-gravity conveyors that move the material to mixers at a distant location.

A low-pressure tank and pump combination — a batch feeder — gives you close control of volume and the material-air ratio while feeding material into a pneumatic conveying line. Material is introduced through hatches equipped with pressure seals. Then it's

moved within the tank body by an air-gravity conveyor to the pneumatic line to which it is discharged. Line pressure is less than 15 psi. The unit mounts conveniently on trucks, trailers, or skids — serves as a self-discharging bulk carrier.

Conveying Lines

In pipelines the speed required to keep material moving depends on the friction between material particles and between particles

and the conduit wall. The speed needed to convey a particle horizontally is usually more than enough to convey it vertically.

Standard steel pipes between 3 and 12 inches in diameter are usually used for conduit in systems fed by the solids pump. Usually they have flanged ends bolted together, although sometimes they are joined by welding.

When the conveyor line changes direction there is a loss in power. The loss equals the kinetic energy consumed by the change in direction plus the kinetic energy needed for the material to recover the speed lost in the turn. Increasing the turning radius cuts the power loss. It also reduces wall erosion and product degradation. Of course, product degradation is also dependent on the friability of the material being conveyed.

The closed air-activated gravity conveyor has all the advantages of the open type, discussed under feeders, plus several others. It can handle hot material, generally up to about 275°F using a fabric porous medium. With special porous plates, usually ceramic, the limit is 1000°F.

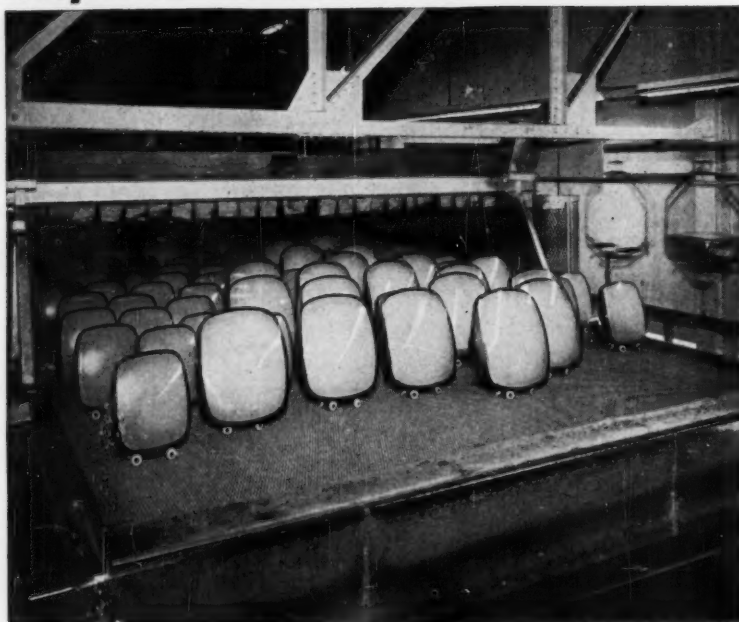
Capacities of air-gravity conveyors range from a few cubic feet per minute to 8,000 cubic feet per hour, depending on the width of the conveyor. Power needs are low; low-pressure centrifugal fans usually supply enough pressure and volume. Depth of material conveyed in a closed air-gravity conveyor is normally 4 inches, but there is no limit to the length over which the system can be operated as long as the right slope is kept. A single air inlet can fluidize material over a length up to 150 feet. Standard units come in straight sections 10 feet long and 4 to 16 inches wide. Standard curved sections have a 6-foot radius to the centerline, come in 1½ to 45 degree segments.

Valves, Indicators, and Controls

You can get multiple outlet valves. They work in many ways, from manually to fully automatic, remote controlled.

Material indicator levels for bins, hoppers, and silos are designed for either direct or remote

Keep Your Product on the Move



TV tubes emerge from a bake-out oven on a 12' wide Ashworth Belt

with ASHWORTH METAL PROCESS BELTS

Every industry has its problem of moving materials during processing. Fabricated from any metal capable of being formed into wire, Ashworth Belts provide a conveying medium permitting processing in transit through temperatures from -50° to 2100° F. Wherever your product must go during processing, be sure to get the "right" belt for the job . . . consult an Ashworth engineer.

Ashworth Metal Process Belts can help you effect economies . . . and keep your product on the move.

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reading. In a control system that is remote and manual, gages on a centrally-located remote control panel indicate the levels in the bins. An operator, by turning panel switches diverts the flow of material.

The need for filters depends on the material, the need to prevent contamination, purity of the air supply, and the possibility of corrosive attack or health or safety hazard from the exhaust air. Often you'll have to depend on the manufacturer's recommendation. An example of how one manufacturer solved a complicated problem of filtering with many variables involved is seen at one plant handling salt cake. They use cotton filter tubes when the material tests alkaline, Orlon when it tests acidic, and Dynel when the pH varies on both sides of 7.

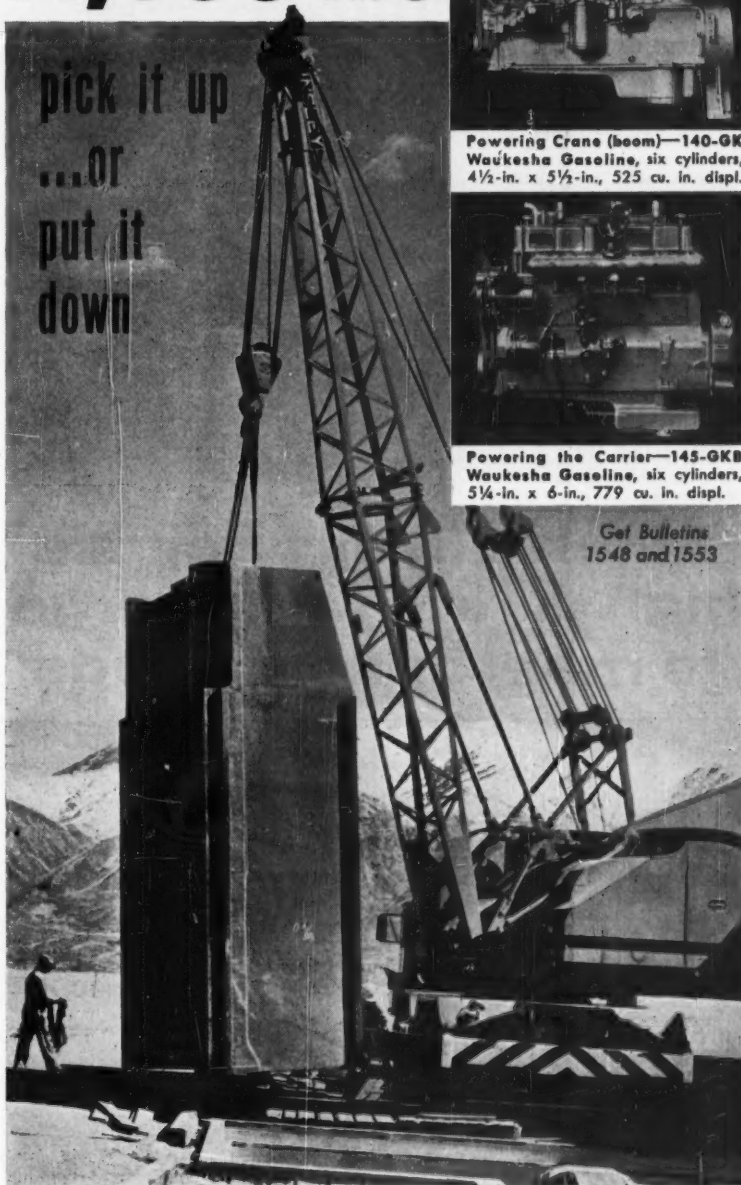
Consider the installation of remote control if you have material going to numerous bins, or if material must be diverted at remote points or at points difficult to reach. Much of this equipment is monitored from a compact, centralized control panel arranged as a flow chart. Sometimes it's lighted to better show the distribution and flow through the entire handling system.



Yes, this is the crane operator.

77,300 lbs

pick it up
...or
put it
down



Powering Crane (boom)—140-GK Waukesha Gasoline, six cylinders, 4½-in. x 5½-in., 525 cu. in. displ.

Powering the Carrier—145-GKB Waukesha Gasoline, six cylinders, 5¼-in. x 6-in., 779 cu. in. displ.

Get Bulletins
1548 and 1553

77,300 lb. section of press, for fabricating Bomarc surface to air missile parts, was picked up with 40' boom at 18' radius over the side and swung to rear, boomed out to 24' radius and lowered 10' to its base. Waukesha 140-GK engine with torque converter powers crane boom.

INSLEY TRUCK CRANE does it with **WAUKESHA** P O W E R

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK

TULSA

LOS ANGELES

437

Factories — Waukesha, Wisconsin, and Clinton, Iowa

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HANDLING WITH HOISTS

(Continued from page 76)

type starts out at its top operating speed, fluid couplings or ballast resistance are sometimes added to smooth out the initial lift movement.

Hoists with two or three fixed speeds are available with ratios of 2:1, 3:1, or 4:1, or combinations. With this type of hoist, each speed remains constant although the load weight might

change. Also available are variable speed hoists with slip-ring motors. These accelerate through speed points; timers prevent the operator from jumping into top speed. Generally the speed varies somewhat with the weight of the load on this kind of hoist.

6. *What kind of mounting will the hoist need?*

You can get a variety of mountings: hook, bolt, plain trolley, gear trolley, single or variable speed motor-driven trolley. Use the following recommendations to select the proper mounting for

your hoist:

a. Use bolt suspension for a hoist in a fixed position. This kind of mounting provides a great amount of stability.

b. Use a hook suspension when you have to move the hoist from one stationary location to another.

c. For loads up to two tons, when overhead runway or beams are close to the floor, use plain trolley mountings.

d. When loads must be spotted accurately but are moved infrequently, use a hand operated, chain propelled trolley suspended hoist.

e. When loads must be moved frequently, when runways are high above the floor, when loads must be moved over long obstructions or warehouse stacks, when the loads are long and bulky, use motor-driven trolley suspended hoists.

7. *How far will the hoist have to travel? How often?*

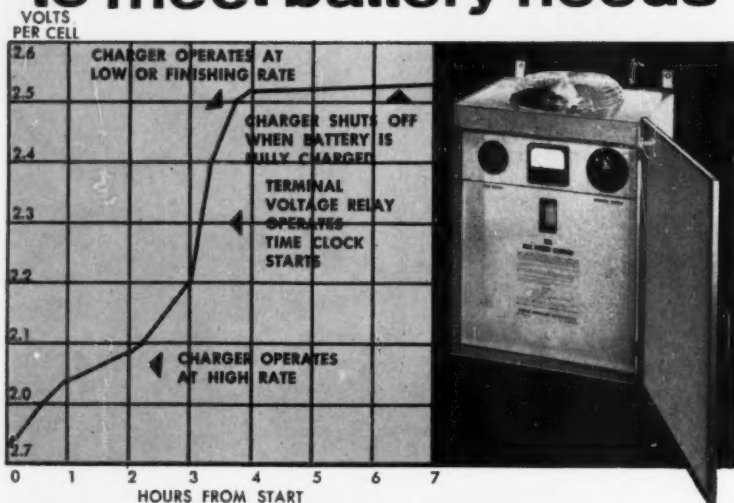
Distance and frequency of travel are important selection factors. As seen in rule 6, they influence your choice of mounting. They also affect the total number of lifts you can make in an hour, and therefore influence the kind of hoist you select.

8. *Will you be operating the hoist under hazardous conditions?*

Certain atmospheric conditions and floor conditions will affect you hoist selection. Your operations might be potentially dangerous because of grain dust, fumes, inflammable liquids of a volatile nature. You can get special equipment for these conditions, such as hand hoists with non-sparking hooks and chains, air hoists, spark enclosed electric hoists. Hoist manufacturers can recommend whatever safety features you might need for your particular application. (For example, pendant rope operating controls are sometimes placed on hoists used by workers standing on wet floors.)



Automatically adjusts high and low rate charge to meet battery needs



With a Power-MAC you can't make a mistake and damage lift truck batteries by over-charging. This chart shows how Power-MAC two-rate charging delivers a high current during the first hours of charging, then tapers off according to the battery's requirements, and finally turns itself off automatically when the battery is charged to full operating capacity.

Increase the efficiency of your lift trucks by extending battery life and maintaining original capacity. Bulletin 101 A9 gives all the Power-MAC facts. Call or write for your free copy today.

Motor Appliance Corp.

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For assistance in preparing this article, MHE thanks American Engineering Co.; The American Monorail Co.; Euclid Crane & Hoist Co.; Ingersoll-Rand Co.; The Yale & Towne Manufacturing Co.; Yale Materials Handling Division.

STRAPPING TOOLS

(Continued from page 86)

strapped. The operator tightens the strap by tightening the handle. Another is the rack type. It's hand-operated, with fixed take-up. These come with two types of heads: duckbill (also called footless or gripper bar) for round or irregular shapes, or gripping dog for boxes, crates, and other flat surfaces. Still another type is the windlass or drum type, for heavy duty flat strapping. These have unlimited take-up and are good for super-strong tensioning. They also come with a choice of duckbill or gripper dog heads.

For round strapping, and some flat, a combination one-piece does the entire job of tensioning, sealing, and cutting. It tensions, ties a knot in the strap and cuts it off with a single stroke of the operating handle.

Sealing

The three most common ways to seal flat strapping are: crimping with metal seals, crimping without seals, and spot welding. Using metal seals, the operator first tensions the strap, applies a band of metal around the overlapping ends, then crimps the band with the jaws of the sealing tool. Crimping without seals, the operation is similar, but without the metal band. Both of these types of sealers may be separate tools or built into the tensioner, depending on the type of application. A Johnny-come-lately in sealing is the spot-welded seal.

Whatever sealing method you use, check the seals carefully. Inspect them to make sure they're tight and clean. Any seal with slight imperfections will probably break.

Cutting

The strap around a container has to be cut twice: once when it's put on and again when it's taken off. Cutting the length of strap off the main reel or other source when applying it is usually the job of the tensioning tool. Sometimes you just have to bend the tool at the seal and break off the strap. Other times there may be a special cutting device. To

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For more than 50 years Standard Conveyor has concentrated on the design, manufacture and application of power and gravity conveyors and related equipment for the handling of varied commodities. This specialization has

developed improved design and construction in the conveyor equipment . . . and has given us an invaluable reservoir to draw upon in meeting your material handling problems.

Check with your experienced Standard engineer before you begin your modernization planning. His recommendation will save on initial costs as well as assure continued economies in handling costs for the future.

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To keep things moving — on production, assembly, processing or packing lines — mechanize your handling with conveyors. Standard furnishes all types — power and gravity, belt, roller, slat, chain, push-bar, sectional.

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STRAPPING TOOLS

(Continued)

open strapped packages, most companies use simple shearing tools. But even here, make sure you use the right tool. The wrong one may be slowing down your operation, and may even be unsafe.

How Mechanized Should You Get?

To answer that question, first

determine the production rate of the other operations of which the strapping job is a part. If strapping is occasional, you can probably get along with simple hand tools. But if you do a lot of strapping you'll probably save money by using powered tools. Generally they do the job faster and better. Like with other plant equipment, however, there's a point of diminishing return with strapping tools, where the cost of added speed outweighs the advantages.

If you decide on powered tools, there are plenty to choose from. They may be semi-automatic, automatic, or fully automated.

Semi-automatic—These usually combine tensioning, sealing, and cutoff into a single operation. Sealing is with metal seals fed from a self-feeding magazine. The operator positions the strap and turns the machine on and off for each package. You can make machines like this easier to use by the way you mount them. No need for the operator to lift them up each time; they can be suspended at usable height, or mounted along the line at the point they're to be used.

Automatic—Even more of the work is done by these machines. In addition to tensioning, sealing, and cutoff, they usually position the strap automatically. Some sort of guide is used to put the strap around the package, and feed from the strapping reel is powered. Sealing may be by metal seals or welding.

Fully automated—The field is wide open here. You can get strapping machines to do anything you want, if you're willing to pay the price. And often it's worth it. If you already have automatic strapping machines, you can make them fully automated by adding electronic controls to eliminate the operator. But that's automation in its simplest form. There are much more sophisticated systems available. For example, some machines will strap any package that goes by, regardless of its size, shape, or how fast it travels. Others will vary in tension, position of straps, or type of strapping according to coded marks on the package. New systems are being developed almost daily.

Let Your Supplier Help

Take advantage of the tremendously valuable service provided by strapping manufacturers. Their factory trained sales engineers can help you decide what's best for you. Not only will they tell you what strapping and strapping tools are best for you, but they can often help you design a system for using them that can improve handling and packaging in your entire plant.



a **GIANT** for performance
a **MIDGET** for expense

New (Model 734) Heavy Duty

CUSHMAN ELECTRIC TRUCKSTER

Built to carry a half-ton payload plus operator and passenger, the three-wheeled Cushman 734 Electric Truckster is a versatile and penny-pinching performer. You save money, gain convenience in light hauling, plant supervision and security, warehouse service, personnel transportation, and many other jobs.

Particularly suited for applications where gasoline powered equipment is not desirable, the 734 Electric Truckster is easy to handle, easy to maneuver in cramped quarters.

Rigid unitized construction... heavy duty rear suspension... wedge type drive belts... a big 45 $\frac{1}{4}$ " x 61 $\frac{1}{2}$ " flat bed that can be equipped with stake racks... all add up to a rugged workhorse. Heavy duty batteries deliver up to 50 miles before recharging. Fiber glass cab is available as optional equipment.

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CATALOGS and BULLETINS

offered in advertisements in this publication

Lower in initial costs . . . the Hydra-Drives torque converter with a stick shift transmission reduces operating and maintenance costs on heavy-duty off-highway trucks. Up to 80% of shifting is eliminated. Company says to select a transmission ratio to fit the haul, and let the converter handle the changing load conditions with a minimum of gearing. Full information available from Rockwell-Standard Corp.
Circle 478 on Reader Service Card

Four Leasing Plans . . . covering 150 Elpar industrial trucks are available from The Elwell-Parker Electric Co. A booklet is offered that explains the plan. A rate table is included to permit estimating the cost.
Circle 73 on Reader Service Card

Motor Driven Cable Reels . . . for use in furnishing power or combination power and control beyond the handling capacity of spring-driven reels. Bulletin 505, Appleton Electric Co.
Circle 22 on Reader Service Card

Service When You Need It . . . is the aim of Towmotor Corp. Over 90% of replacement parts are carried in stock, others can be obtained within 24 hours. Prompt repairs are made by experts and all jobs are given emergency treatment to get trucks back on the job in the least possible time. Service Bulletin SP-18 gives full details.
Circle 172 on Reader Service Card

To Haul, Switch and Spot Railway Cars . . . the Whiting Trackmobile is said to be ideal. Besides running on rails, it also has a set of retractable tires which may be used when traveling on roads and yards. A case history, Bulletin 245, is available on request.
Circle 186 on Reader Service Card

Shock Absorber Door . . . has urethane-filled bumpers which absorb the shock instead of the door. Neoprene seals eliminate drafts. Spring return is guaranteed. Clark Door Co., Inc.
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Longer Battery Life . . . is assured in Edison batteries through the use of a new active material. Some of the features are fully automatic charging, no corrosive fumes, and they can stand idle indefinitely. McGraw-Edison.
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Yard-Handling Crane . . . has an 11-

ton capacity. Is operated by one man and powered by one engine. Can travel with loads up to 5½ tons. A 12-page catalog giving actual picture coverage of all kinds of jobs is available. Schield Bantam Co.
Circle 165 on Reader Service Card

Cranes & Hoists . . . Air hoists, electric hoists, and hand hoists together with trolleys, cord reels, and gantry frames are all discussed in literature on their complete line by Manning, Maxwell & Moore, Inc.
Circle 115 on Reader Service Card

Woven Wire Slings . . . are pretested to meet load specifications. They are available in standard lengths and widths with capacities up to 100,000 lbs. Special sizes, alloys or Neoprene or PVC covered slings are also available. The Cambridge Wire Cloth Co.
Circle 42 on Reader Service Card

Inflatable Dunnage . . . cuts damage claims, speeds loading and unloading. It's returnable and reusable. United States Rubber Co.
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Expandable Pallets . . . are made of tough, hardwood fiberboard and can be used again and again. They end the need for customer deposits and eliminate returns. Mead Corp.
Circle 122 on Reader Service Card

Narrow Aisle Tiering Trucks . . . operate in 6 foot aisles and give you up to 50% more storage space. A bulletin is offered by The Raymond Corp.
Circle 149 on Reader Service Card

Conveyors . . . Standard Conveyor Co. furnishes all types—power and gravity, belt, roller, slat, chain, push-bar, and sectional. A booklet is available.
Circle 161 on Reader Service Card

Eliminate Unnecessary Handling . . . Nestier steel containers are filled with small parts in the stockroom and tiered in stacks on pallets or conveyors. Twin handles permit easy lifting or suspension from overhead conveyors. Perforated baskets can be used in dipping or degreasing operations.
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Drop-Bottom Containers . . . to be used for handling bulk material. Load from the top and unload from the bottom. Can be used with fork lift truck

or with cranes. Youngstown Steel Door Co.

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Do-It-Yourself Shelving . . . Stringers are of one-piece and made of durable, continuous welded steel tubing, made from high carbon steel. One of the features is a double-wedging lock to prevent unhooking stringers. American Metal Products Co.

"How to Solve Your Storage Problems" is a booklet offered by Equipto. It discusses their iron-grip steel shelving.

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A Wetting Agent That Never Fails . . . is built right into Ludlow's Comet Tape. As the tape passes over the brush, the glue is activated assuring fast, effective sealing with a minimum of pressure. Ludlow Papers, Inc.
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Automatic Battery Charger . . . makes it impossible to damage batteries by over-charging. A high current is delivered during the first hours of charging, then it decreases according to the battery's requirements. Motor Appliance Corp.
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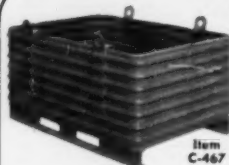
Wirebound Boxes & Crates . . . for all shipping and packaging requirements are discussed in literature from Rathborne, Hair & Ridgeway Box Co.
Circle 147 on Reader Service Card

"A Guide to Proper Selection of Vibrating Conveyors" . . . is a booklet offered by Ajax Flexible Coupling Co., Inc.
Circle 4 on Reader Service Card

Freight Claim Losses . . . in the freight hauling business is the subject of a booklet offered by Diagraph-Bradley Industries, Inc. It discusses their method of shipment addressing with stencils.
Circle 67 on Reader Service Card

Metal Process Belts . . . operate in temperatures ranging from -50° to 2100° F. Illustrated literature is available from Ashworth Bros., Inc.
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Sling Book . . . from Roebling gives complete details on their major types—All-Purpose with Tapered Sleeve, Roegal Cable-Laid and "Flatweave." It's yours for the asking.
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It Loads Automatically. Three style wheels metal, rubber and pneumatic. Capacity 1000 lbs. 22" wide for narrow openings. Weight 85 lbs.

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Use anywhere heavy loads are moved and rubber tired wheels are desired. 54" long, 28" wide, 42" high at handle. Top of platform 14" off floor. Welded construction. Heavy 1/4" plate. Two swivel wheels at handle end. Approx. wt. 300 lbs.



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For picking up heavy boxes, crates, bales or other loads where hooks may be used. Heavy, forged steel hooks adjustable spread of from 16" to 48".

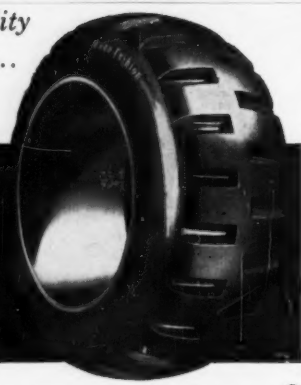
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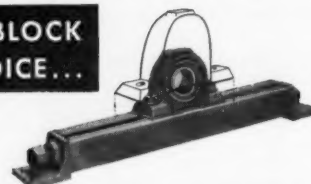
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- WESTERN WAREHOUSE: Reno, Nevada

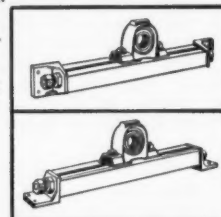
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MATERIAL HANDLING ENGINEERING

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138

Don't Miss HANDLING WITH HOISTS

page 74



If you didn't read "Handling With Hoists" in this issue, by all means do so. It contains the latest data on hoist selection and use, developed with the help of leading manufacturers. But the article is not complete. We need your help to finish it.

The questionnaire below, prepared with the help of the Hoist Manufacturers Association, is designed to gather information which will be of value to users and manufacturers of hoists. Obviously, it may be difficult to give exact numbers of every type of hoist in use in your plant. In those cases, please give an approximate number.

Tear out this entire page, fold it in half, staple it at the bottom and drop it in the mail. Use no stamp . . . we'll pay the postage. If you wish a copy of the results of this survey, include here your:

Name _____ Title _____ Company _____
Address _____ City _____ State _____

► Approximately how many of each of the following types of hoists do you use?

HAND HOISTS:	Number in Use
Permanently hung	
Suspended from trolley	
Built Integrally with Trolley (Army Type)	
Ratchet Lever	

AIR HOISTS:	Number in Use
Permanently hung	Wire rope Chain
Suspended from trolley	a. plain b. geared c. motor driven
Capacities	500 pounds 1000 pounds 1 ton 2 ton 3 ton 5 ton
How many air hoists in hazardous areas?	
How many air hoists in non-hazardous areas?	

ELECTRIC HOISTS:	Number in Use
Light duty	Wire rope Chain
Medium duty	
Heavy duty	
Permanently hung	
Suspended from trolley	a. plain b. geared c. motor driven
Capacities	1000 pounds 1 ton 2 ton 3 ton 5 ton 7½ ton 10 ton
Type of Control	Manual (Pendant Rope) Push Button Single Speed
Speeds	Two speed Variable speed

	YES	NO
► Are you replacing hand hoists with electric?.....	<input type="checkbox"/>	<input type="checkbox"/>
► Are you replacing hand hoists with air?.....	<input type="checkbox"/>	<input type="checkbox"/>
► Are you replacing electric hoists with air?.....	<input type="checkbox"/>	<input type="checkbox"/>
► Are you replacing air hoists with electric?.....	<input type="checkbox"/>	<input type="checkbox"/>
► What is the average ceiling-to-floor distance in your plant?.....		
► What type industry are you in?.....		
► How many employees in this plant?.....		
► Where is this plant located? City..... State.....		

STAPLE

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FIRST CLASS
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CLEVELAND, OHIO

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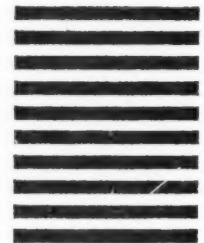
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Company
Street
City
State
Zip
Position
Kind of Business

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1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
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97	98	99	100

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89	90	91	92
93	94	95	96
97	98	99	100

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Name _____
Company _____
Street _____
City _____ State _____
Zone _____
LITERATURE ON ITEMS CIRCLED BELOW.

City	PLEASE	SEND ME	ADDITIONAL	INFORMATION	AND	LITERATURE ON	ITEMS	CIRCLED	BELOW.											
1	26	51	76	101	126	151	176	201	226	251	276	301	326	351	376	401	426	451	476	491
2	27	52	77	102	127	152	177	202	227	252	277	302	327	352	377	402	427	452	477	492
3	28	53	78	103	128	153	178	203	228	253	278	303	328	353	378	403	428	453	478	493
4	29	54	79	104	129	154	179	204	229	254	279	304	329	354	379	404	429	454	479	494
5	30	55	80	105	130	155	180	205	230	255	280	305	330	355	380	405	430	455	480	495
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Zone _____
LITERATURE ON ITEMS CIRCLED BELOW.

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With a Gripper Sling, even delicate motor parts, polished stock or thin walled tubing can be moved without load damage. The smooth, broad bearing surface doesn't cut or score the load. Spiral wire construction gives the Gripper Sling complete flexibility . . . allows the sling to wrap around the load and hold it in a firm, but gentle, grip. Gripper Slings are extra safe because there's nothing to snap or tear suddenly and drop the load.

Gripper Slings, pretreated to meet load specifications, are available in standard lengths and widths with capacities up to 100,000 lbs. Special sizes, alloys or Neoprene or PVC covered slings available. Write for FREE CATALOG and name of your nearest materials handling distributor.



The Cambridge Wire Cloth Co.

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CAUTION: This must be mailed first class in a sealed envelope.

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Company..... Kind of Business.....

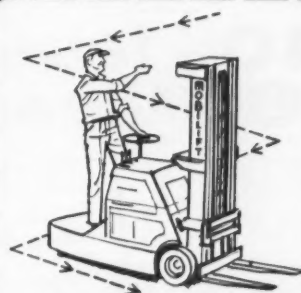
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City..... Zone..... State.....

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SEPTEMBER, 1959



ask your driver
about **MOBILIFT**

and the Mobil-Matic transmission. He will tell you it means day-after-day, easy-to-operate control on both stand-up and sit-down models.

Look us up in the Yellow pages or write today for further details!

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REEFER KING

PALLET ROLLERS

For complete specifications, sizes, capacities, etc., write for Eng. Bulletin 103K.





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STRAPPING ACCESSORIES

(Continued from page 88)

feed mechanisms to deliver the exact length strap needed. Still others feed several straps at once. Dispensers come in portable models too, so you can easily move the entire strapping operation from one location or another. They may also have compartments for tools and seals.

Tool Mounts

To speed strapping and make the job as easy as possible for the operator, you may want special mounts for the tensioning and sealing tools. There's no limit to number of varieties possible. You can suspend the tools at working height, mount them on conveyors, or design any other arrangement to suit your plant layout.

Corner Protectors

Don't be scared off by the fear of strapping cutting into the cor-

"even a little man can move a Sterling"

40% less lift 60% less push

- Smooth rolling Sterling barrows require a minimum of energy... even a little man can move 'em. Tests recently completed with three makes of wheelbarrows, each loaded with 320 lbs. of sand, show Sterlings require 40% less vertical force and 60% less horizontal force... an amazing performance record. The actual figures are shown at right.
- Yes — it pays to spend a few dollars more for easy rolling STERLING barrows. Write for catalog.

	Vertical Force Required	Horizontal Force Required
Wheelbarrow "A"	125 lbs.	22 lbs.
Wheelbarrow "B"	128 lbs.	20 lbs.
Sterling Barrow	77 lbs.	8 lbs.





STERLING NATIONAL INDUSTRIES, Inc.
Milwaukee 14, Wis., U.S.A.

Sterling

WHEELBARROWS

Look for this Mark of STERLING Quality

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TOP



PULLEY PERFORMANCE AT LOW COST

Here is the new Hydro Crowned Pulley with the crown formed right in the steel. These pulleys give better conveyor belt performance than expensive in-the-crowned pulleys. Yet they cost no more than those with lagged crowns.

- Conveyor manufacturers: save up to \$3 a pulley.
- Conveyor purchasers: specify these pulleys for better belt tracking, no pulley maintenance and longer life.

For complete information, write: Dept. F
(Patents applied for.)

THE CHANTLAND COMPANY
HUMBOLDT, IOWA U.S.A.

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MATERIAL HANDLING ENGINEERING

ners and damaging your product. Your strapping supplier can show you several kinds of corner protectors that eliminate this hazard. There's one for any kind of product or container. Caution: don't try to improvise your own. It's not worth it. You run the risk of damaging the product or breaking the straps with the wrong kind of corner protector. Better by far to let your supplier show you the right kind for your particular product and type of strapping.

Anchor Plates

The anchor plates are as important as the strapping itself for bracing loads in rail cars. Nailed to the car walls, they give you something concrete to fasten the straps to. Make sure to follow freight regulations for strapping loads in vehicles. Let your supplier help you pick the best anchor plates for your needs. See chart below for steps in attaching straps to another plate.

Others

There are many other useful accessories for special uses. Snubber plates can help reduce damage in transit by stabilizing floating loads. Retarders restrict movement of loads on pallets and skids. Strapping stays hold the straps in place while you're loading.

Any one of these might make the difference between successful and unsuccessful strapping, between damaged and undamaged merchandise.

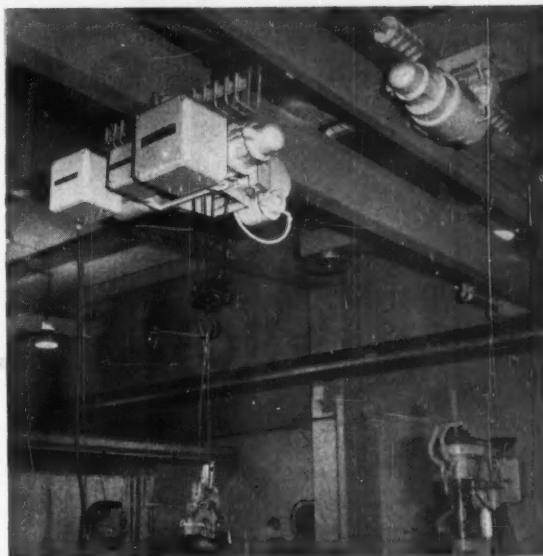
For their cooperation in this series of articles, MHE thanks Acme Steel Co.; Allegheny Steel Band Co.; Brainard Steel Div., Sharon Steel Corp.; General Strapping Corp.; A. J. Gerrard & Co.; Signode Steel Strapping Co.; The Stanley Works, Steel Strapping Div.; U.S. Steel Supply Div., United States Steel, and the Association of American Railroads.

WHAT IS THE TREND IN HOISTS?

See page 139

SHEPARD NILES HOISTS

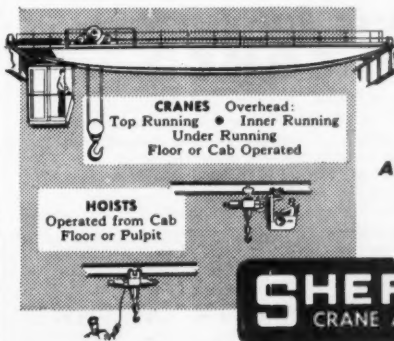
YEARS of SERVICE WITH TROUBLE-FREE PERFORMANCE



You can be certain of years of thrifty, dependable service when you invest in a Shepard Niles hoist. Long after you have written off the original cost, your Shepard Niles hoist will still be speeding raw materials and work-in-process through the air.

Choose from medium and heavy duty capacities with slow, medium or fast speeds . . . built for cycle duty, heavy intermittent duty, medium duty and light occasional service . . . available with short to long lifts, standard or close headroom, manual or magnetic controls.

Send for illustrated Hoist bulletin today . . . or ask that a Shepard Niles representative call—there's NO OBLIGATION.



Building

America's Most Complete Line
of Cranes and Hoists
Since 1903

SHEPARD NILES
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2793 Schuyler Ave., Montour Falls, N.Y.

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NOW YOU CAN LIFT and DUMP ANY CONTAINER



HYDRO-DUMPER

Dumps up to 4 feet. Load capacity, 6000 pounds.

JUNIOR DUMPER

Dumps up to 8 feet. Load capacity, 700 pounds.

SENIOR DUMPER

Dumps up to 20 feet. Load capacity, 4000 pounds.

VERTICAL DUMPER

Dumps to any practical height. Load capacity, 4000 pounds.

Yes, no matter what size, shape or type container you use to receive, store or process free-flowing material — or whether it's a special in-plant container — ESSEX can supply the necessary dumper.

ESSEX dumpers are flexible in design so they can be modified to suit your job conditions. For the safe, reliable, economical way to lift and dump material in any container, call upon ESSEX for the answer.

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Your ideal source for custom-designed cranes CONCO

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CONCO ENGINEERING WORKS

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STEEL STRAPPING FACTS

(Continued from page 85)

that it stretches, but less commonly known is that within certain limits it will shrink back to shape after stretching.

Biggest difference between standard and heavy duty strap is the amount they stretch. Standard strap stretches very little. You can draw it to its full tensile strength¹ with practically no elongation. That makes it ideal for strapping cartons, bundles, bales, and other relatively light packages, since they don't usually exert very much shock on the straps. Standard box strapping comes in sizes from 1/4" x .010" (tensile strength about 325 lbs) to 3/4" x .035" (tensile strength about 2,500 lbs).

Heat treated heavy duty strapping, on the other hand, will usually stretch under tension. That makes it good for heavy-weight applications like carloading, where the straps must bear the shocks of loads weighing in the neighborhood of 50,000 lbs. These straps have to stand up under bounces, twisting, stretching, and other tortures, and roll with the punch. They range from 3/4" x .028" (tensile strength about 2,400 lbs) to 2" x .065" (tensile strength 15,000 lbs).

Round Strapping

While most strapping is flat, you can also get round and oval types. They have many important uses. Don't confuse round strapping with common wire; it has a high carbon content and is usually heat treated for high tensile strength. It may be perfectly round or oval-shaped where round straps would tend to indent into the load. It comes in sizes from 8 to 19 1/2 gauge. It's usually closed by twisting, without seals.

Selection Factors

One of the most important things to consider when picking the right strapping is the *compressibility* of the product being

¹ Tensile strength is a measure of the strap's rated strength, or the amount of weight it will hold before breaking. However, it does not include the strength of the seal. For figuring strength with seal, figure about 80 percent of rated tensile strength. Use two seals for full strength.

strapped. If the product or package is soft, like a corrugated box, cold rolled box strapping with practically no stretch is the best bet; the soft package will absorb most of the impact of rough handling. On the other hand, when bundling noncompressible products like coil steel or pallet-loads of brick, hot rolled steel is best. Its stretch will absorb much of the shock of rough handling.

To pick the right size strapping, let the weight of the product be your guide. There's no general rule here; the size depends on the nature of the product, its shape, handling and shipping methods, etc.

Special Strapping

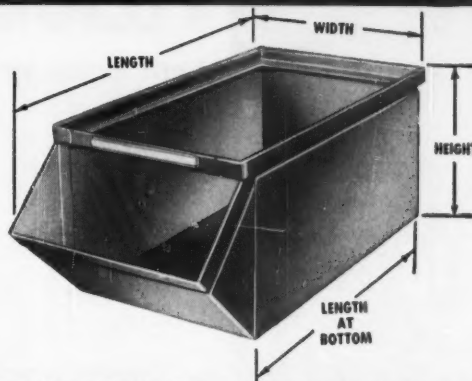
Printed—You can get most kinds of steel strapping printed at intervals with your company name or logotype, in any color. The advantage is not only for advertising, but pilfer-proofing too, since your custom-printed strapping would be impossible for even an enterprising thief to replace.

Curved—In many situations it may be to your advantage to use a strapping that curves, with its edges curving inward toward the container. (For example, where packages slide across rough surfaces, regular strapping might snag.) Curved strapping is available in most standard sizes.

Punched—Some users prefer to nail strapping to the container. It adds to the carrying strength of wooden boxes and crates. Also, doorways in boxcars can be blocked with straps nailed across the doorway. When strapping is to be nailed, you can buy it with prepunched holes. Various sizes are available, with different size holes and at any intervals.

Special metals—In most cases ordinary steel strapping is sufficient. But there may be times, like when shipping overseas, when you'll need a strap that won't corrode under long exposure to bad weather. In cases like this you can get galvanized steel strapping. Or, for extreme protection, stainless steel. There may also be cases when you'll need special metal. Strapping is available in aluminum, brass, copper, and other non-ferrous metals. Ask your supplier about them.

**REDUCE HANDLING COSTS!
INCREASE STORAGE CAPACITY!
SIMPLIFY PARTS CONTROL!**



"CUSTOM BUILD" TO SUIT YOUR NEEDS WITH MULTI-PURPOSE STACKBINS



In processing . . .

portable Stackbins carry common parts and supplies to points of usage without time-wasting transfer to other containers.



In storage . . .

Stackbins stack securely to any desired height, with or without Stackracks. Floor space requirements reduced — stock capacity increased.



In assembly . . .

Stackbin flexibility permits adapting assembly station to production requirements.

Available in sizes to suit your requirements

Bin No.	Width	Length	Bottom Length	Height	Weight (lbs.)
00	3½"	6"	4"	3¾"	1¼
0	4½"	8"	6"	4½"	1¾
1	5½"	12"	10"	4½"	3
2	7½"	15½"	12¼"	6"	5½
3	9"	18¾"	14¾"	7¼"	9
4	12"	20½"	15¾"	9½"	14
5	15"	24"	18¼"	11"	20½
6	18"	30"	24"	12"	29

STACKBINS ARE MADE of heavy gauge steel, all-welded construction with positive stacking rim. Full flow hopper front and smooth interior make contents always visible — always accessible.

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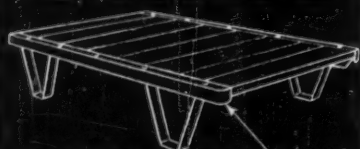
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"Stacked and

Still Accessible"

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ROUNDED SAFETY CORNERS

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ONE JACK SERVES MANY SKIDS

Floor Trucks

ONE OR TWO PUSH HANDLES



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MATERIALS HANDLING EQUIPMENT

**IRONBOUND BOX &
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30 HOFFMAN PLACE, HILLSIDE, N. J.

Circle 101 on Reader Service Card



MATERIAL HANDLING MOVIES

(Continued from page 78)

"L-P Automatic Pallet Loader"

(15 minutes, 16mm, color, silent)
Shows new concepts of automatic pallet loading. Includes automatic taping at top layer of cartons on pallet loads.
Lathrop Paulson Company
2459 W. 48th Street
Chicago, 32, Illinois

POWERED INDOOR VEHICLES

"Raymond Reach Fork Truck"

(12 minutes, 16mm, black and white, sound) Designed to show the features of the Raymond Reach Fork Truck.
The Raymond Corporation
Greene, New York

"Grocery Handling"

(11 minutes, 16mm, black and white, sound) A handling system in a modern wholesale warehouse. Scenes show merchandise palletized in the car, lift trucks hauling and raising loads in storage, etc. Presents advantages of an efficient warehouse and mechanical handling.

Hyster Company
2902 N.E. Clackamas Street
Portland 8, Oregon

"Handling Rolls With The Bartel Device"

(12 minutes, 16mm, black and white, sound) Shows rolls of newsprint going from ship's hold into storage at 80 tons per gang hour; unloading a forty-roll boxcar in 30 minutes with no man-handling. All done with fork-lift trucks and the Bartel Device.

Advertising and Sales Promotion Department
Clark Equipment Company
Industrial Truck Division
Battle Creek, Michigan

"Moving With Imagination"

(18 minutes, 16mm, color, sound) Shows through animation and on-the-job photography how the Drott Go-Devil tractor crane complements most material handling systems.

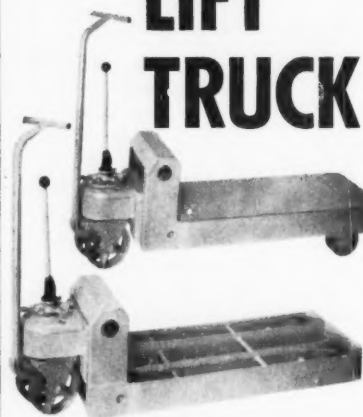
Drott Mfg. Corp.,
3126 South 27th Street
Milwaukee 15, Wisconsin

"The Hyster Monomast"

(10 minutes, 16mm, color, sound) De-

Introducing ...
COLSON'S
completely new

SKID PLATFORM LIFT TRUCK



**NOW! AVAILABLE WITH
OPEN OR CLOSED DECK**

- 40% lighter than similar trucks.
- Higher underclearance, 5" maximum.
- Simple, thrifty hydraulic mechanism.

Good news! It's here, the industry-perfected Hydraulic skid lift truck built only by Colson. There's new power, new maneuverability, new ease of operation in every move it makes. New balanced load design and all welded construction allows smooth handling of heaviest loads. Perfect for congested areas. Sizes to handle from 2500 to 4000 lb. loads in models to meet individual requirements.

COMPLETE! Colson now offers a full line of lift trucks, platform and pallet type, using common interchangeable parts.
Write for a free catalog.

Write to:

The Colson Corporation
Special Products Div.
Somerville 43, Mass.

Plants in: Jonesboro, Ark., Elyria, Ohio,
Somerville, Mass., and Toronto, Canada.



Circle 53 on Reader Service Card
MATERIAL HANDLING ENGINEERING

scribes the many advantages of Monomast in value of increased visibility conditions. A product and general application film, not a case study.

Hyster Company
2902 N.E. Clackamas Street
Portland 8, Oregon

"Powered Industrial Trucks"

(27 minutes, 16mm, black and white, sound) Film deals with different types of powered industrial trucks and their uses. Developed for The Material Handling Institute, Inc., by the College-Industry Committee on Material Handling Education.

Ideal Pictures
58 East South Water Street
Chicago 1, Illinois

"Ease The Profit Squeeze"

(16 minutes, color, designed for use on an automatic Duquesne projector) This is a cartoon treatment of the merits of battery powered industrial trucks.

Exide Industrial Division
The Electric Storage Battery Co.
P.O. Box 5723
Rising Sun & Adams Avenue
Philadelphia 20, Pennsylvania

"Moving Mountains"

(27 minutes, 16mm, color, sound) Shows the history of material handling from ancient civilizations to mountain-moving machines of today.

Advertising and Sales Promotion Department

Clark Equipment Company
Industrial Truck Division
Battle Creek, Michigan

"New Horizons In Material Handling"

(18½ minutes, 16mm, color, sound) Describes the operation and functions of the Guide-O-Matic operatorless tractor. Tells how it operates, what it will do.

Barrett-Cravens Co.
630 Dundee Road
Northbrook, Illinois

"L.P.G. Motor Fuel"

(35 minutes, 35mm, slidefilm, sound) Its use as a motor fuel. Source of LPG, transportation and its use in internal combustion engines.

Century Gas Equipment Company,
Marvel-Schebler Prod. Division
Borg Warner Corp.
625 Southside Drive
Decatur, Illinois

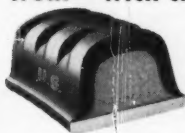
"Handling Groceries The Certified Way"

(12 minutes, 16mm, black and white, sound) Story of Certified Grocers of California, Ltd. Emphasizes use of the Clarkette-5 towing tractor in order selection.

SOFTTEST-RIDING... BIGGEST-SAVING!



Get 5½ times more cushioning—plus longer wear—with the great U. S. Royal Innacush!



Best way known to cushion your drivers, loads, vehicles from bump and shock—that's the U. S. Royal Innacush®. The only successful two-stock construction—tough and cut-resistant outside, soft and shock-absorbent inside. It soaks up 575% more impact. It actually doubles wear life, gives you the biggest money savings in industrial tires. Protects floors. Why settle for less? Always buy and specify U. S. Royal!

Available in pressed-on or demountable type.

Write W. J. Shalley, Industrial Tire Dept., for complete industrial tire manual.

U. S. ROYAL TIRES



United States Rubber

Rockefeller Center, New York 20, N. Y. • In Canada, Dominion Rubber Co., Ltd.

Circle 177 on Reader Service Card for more information



MATERIAL HANDLING MOVIES

(Continued)

Advertising and Sales Promotion Department
Clark Equipment Company
Industrial Truck Division
Battle Creek, Michigan

"The Box-Grab"

(9 minutes, 16mm, black and white, sound) A case study film with a description of the hydraulic box-grab attachment.

Hyster Company
2902 N.E. Clackamas Street
Portland 8, Oregon

"Modern Material Handling Methods"

(17 minutes, 16mm, black and white, sound) Shows proper methods of breaking out boxcars, loading pallets; correct fork-lift truck handling methods in loading, unloading, and warehousing; advantages of mechanized handling over individual and hand-truck methods. Some obsolete equipment is shown, but methods are basic.

Clark Equipment Company
Industrial Truck Division
Battle Creek, Michigan

"Raymond 4D Truck"

(10 minutes, 16mm, black and white, sound) Designed to show the operations and features of the company's four directional truck and walkie pallet truck.

The Raymond Corporation
Greene, New York

"Materials Handling Newsreel, Issue No. 1"

(29 minutes, 16mm, black and white, sound) Mechanized handling methods in various industries.

Advertising and Sales Promotion Department

Clark Equipment Company
Industrial Truck Division
Battle Creek, Michigan
Portland 8, Oregon

"Turning The Superliner Queen Mary Around"

(14 minutes, 16mm, color, sound) Men and machines unload and load this vessel in a matter of hours—a task that formerly took days.

Hyster Company
2902 N.E. Clackamas Street
Portland 8, Oregon

"Storage Battery Power"

(20 minutes, 16mm, black and white, sound) How the nickel-iron-alkaline type storage battery was conceived and perfected, principles of its operations, and various applications.

Storage Battery Division
Thomas A. Edison Industries
McGraw-Edison Company
51 Lakeside Avenue
West Orange, N.J.

"Materials On The Move"

(30 minutes, 16mm, black and white, sound) Industrial fork lift trucks in operation. Shows cost-cutting material handling at work with important savings outlined.

The Yale & Towne Mfg. Co.
Roosevelt Blvd. & Haldeman Ave.,
Philadelphia 15, Pennsylvania

"Payloads Pay Off"

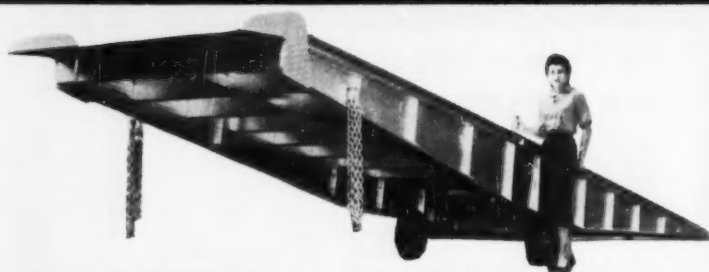
(25 minutes, 16mm, black and white, sound) How to reduce unit cost through mechanizing material handling. Shows how to improve labor relations through material handling methods.

Automatic Transportation Co.
101 W. 87th Street
Chicago 20, Illinois

"Safety Saves"

(25 minutes, 16mm, black and white, sound) A training and safety film for

lite-line Mobile Yard Ramps



**The dock that goes to the job
will cut your loading costs**

A Lite-Line Yard Ramp moves easily into position, to load or unload truck or rail car.

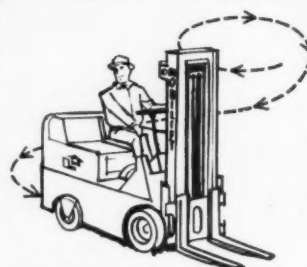
SAFE • RUGGED • LIGHTWEIGHT

For complete information write to

lite-line
MAGNESIUM DOCK EQUIPMENT

LITE-LINE METAL INDUSTRIES
DIVISION OF
COPPERLOY CORP.
P. O. BOX 8438 • CLEVELAND, O.

Circle 39 on Reader Service Card for more information



**ask your driver
about MOBILIFT**

and Mobilift center line steering. He'll tell you it gives him the same handling ease as power steering. No extra cost!

Look us up in the Yellow pages or write today for further details!

LAMSON MOBILIFT CORP.
812 S.E. MAIN ST., PORTLAND 14, ORE.



Circle 109 on Reader Service Card
MATERIAL HANDLING ENGINEERING

industrial truck operators filmed at on-the-job factory and warehouse locations. Advertising and Sales Promotion Department.
Clark Equipment Company
Industrial Truck Division
Battle Creek, Michigan

"Power Shift"

(5 minutes, 16mm, color, sound) A description of the fork lift truck with the convenience of Power Shift Torque Converter Drive.
Allis-Chalmers Manufacturing Co.
P.O. Box 512
Milwaukee 1, Wisconsin

"Bottling Without Bottlenecks"

(25 minutes, 16mm, black and white, sound) A survey of handling methods in bottling plants.
Advertising and Sales Promotion Department
Clark Equipment Company
Industrial Truck Division
Battle Creek, Michigan

"More Space In Your Warehouse"

(12 minutes, 16mm, black and white, sound) Shows the use of a Raymond narrow aisle straddle stacker in a typical grocery warehouse.
The Raymond Corporation
Greene, New York

"The One Man Gang"

(30 minutes, 16mm, black and white, sound) Discusses the economics of material handling; depicts material handling techniques in 10 different manufacturing plants. Complete line of Towmotor forklift trucks and accessories are shown.
Towmotor Corporation
1226 East 152nd Street
Cleveland 10, Ohio

"Time Space And Dollars"

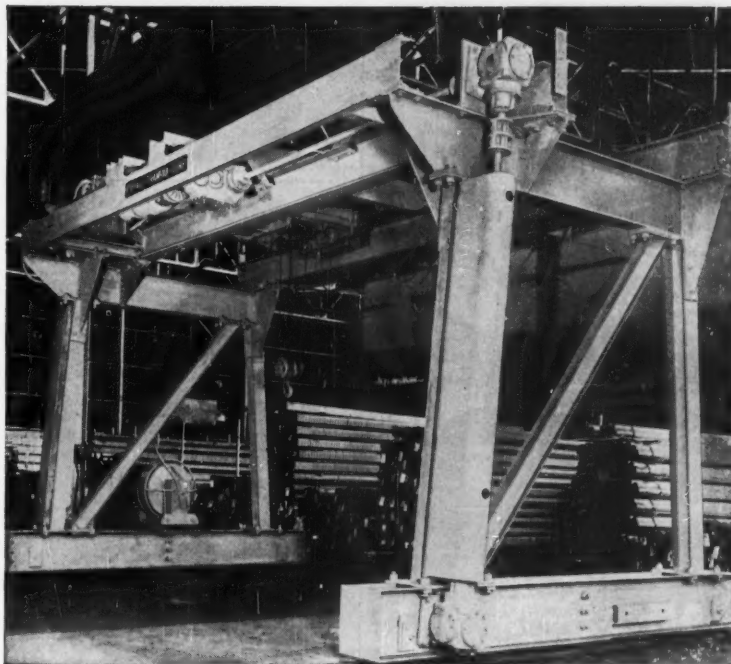
(25 minutes, 16mm, color, sound) Cost saving aspects of material handling for all type products, but mainly rider trucks.
Barrett-Cravens Co.
630 Dundee Road
Northbrook, Illinois

"Silent Hoist Litruck Sealdbin Bag Handler"

(22 minutes, 16mm, color, sound) Show the Litruck with integral boom in Sealdbin bag handling.
Silent Hoist & Crane Co.
841 63rd Street
Brooklyn 20, New York

"Handling Newsprint Aboard Ship"

(12 minutes, 16mm, color, sound) Shows handling techniques involved in



CHICAGO TRAMRAIL

GANTRY CRANES

At the modern plant of one of the country's largest aluminum companies, Chicago Tramrail Gantry Cranes handle long extruded pieces from a 14,000-ton extrusion press . . . transfer these pieces to other operations throughout the mill.

Fourteen Chicago Tramrail Full Gantry Cranes provide individual handling equipment for individual operations to eliminate waste time waiting for busy overhead cranes. Designed for heavy-duty, continuous service, these Gantries are built with maximum headroom and maximum clearance between legs to operate independently under the large overhead cranes.

For a practical, economical solution to your materials handling problems, see our experienced engineers. Special designs, sound engineering and broad application knowledge qualify us for helpful service.

CHICAGO TRAMRAIL CORPORATION

1322 SO. KOSTNER AVENUE • CHICAGO 32, ILLINOIS

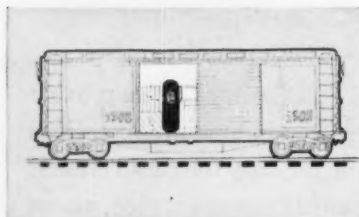
OVERHEAD CRANES • JIB CRANES • STACKER CRANES • MONORAIL SYSTEMS

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**Cut damage claims
...speed loading,
unloading**



**with the U. S. Rubber
Shor-Kwik® System
of inflatable, returnable,
reusable dunnage**



This U. S. Rubber Shoring System cuts damage to goods and cost of claims. Keeps customers happy. Speeds loading, unloading and turn-around time. Cuts demurrage costs. Keeps the freight cars rolling. To learn what this system can do for you, write, or phone DE 1-4000, United States Rubber Company, Providence 1, R. I.



**United
States
Rubber**

Circle 178 on Reader Service Card

152



MATERIAL HANDLING MOVIES

(Continued)

supplying water borne shipments of newsprint from mill site to docks.
Hyster Company
2902 N.E. Clackamas Street
Portland 8, Oregon

"Material Handling"

(8 minutes, 16mm, black and white, sound) This film was photographed in 1956 at the Material Handling Exhibit in Cleveland, Ohio.
Goodyear Tire & Rubber Co.
1144 E. Market Street
Akron 16, Ohio

"Modern Material Handling Methods"

(23 minutes, 16mm, black and white, sound) Shows boxcar loading and unloading, and warehousing. Some obsolete equipment and methods are shown, but film is still valuable as basic material handling film, demonstrating proper use of equipment.
Advertising and Sales Promotion Department
Clark Equipment Company
Industrial Truck Division
Battle Creek, Michigan

"Materials Handling Newsreel, Issue No. 4"

(20 minutes, 16mm, black and white, sound) Diversified modern material handling methods and equipment in 6 different installations.
Advertising and Sales Promotion Department
Clark Equipment Company
Industrial Truck Division
Battle Creek, Michigan

"Packing For Lowest Landed Cost"

(12 minutes, 16mm, color, sound) Story of how a company in the field of export packing completely disassembles, processes, and boxes motor trucks at the rate of two every nine minutes.
Hyster Company
2902 N.E. Clackamas Street
Portland 8, Oregon

"150 Tons"

(15 minutes) Tractor shovel applications for the Foundry industry.
Clark Equipment Company
Construction Machinery Division
Marketing Services, P.O. Box 599
Benton Harbor, Michigan

"KEE KLAMP" SLIP-ON FITTINGS

**...and ordinary
pipe will build a
thousand and one
pipe structures
quicker and
at lower cost**



This "KEE KLAMP" rack increased storage capacity of stockroom by more than 30%

- Shelving
- Pallet racks
- Worktable frames
- Pipe and bar racks
- Display and sign frames
- Grandstands
- Boat docks
- Fencing
- Railings

IT'S ONE, TWO, THREE WITH "KEE KLAMP" SLIP-ON FITTINGS

Pipe does not require threading, it slips into "KEE KLAMP" fittings. Set screws, each having a 4000 lb. direct load capacity, lock pipe rigidly in place.



With "KEE KLAMP" Slip-on Fittings and ordinary pipe, you can build strong, temporary or permanent racks, shelving, frames, railings or any pipe structure for exact space condition and for any load requirement.

"KEE KLAMP" Slip-on Fittings are strong, malleable iron, galvanized, for indoor and outdoor use. **Made in 38 varieties for pipe sizes 3/8" to 2".**

"KEE KLAMP" structures are easily dismantled for moving or modification. "KEE KLAMP" fittings can be used over and over.

WRITE FOR CATALOG K25

Several choice areas open to Representatives with stocking facilities—Write for information.

**KEE KLAMPS
NORTH AMERICA LIMITED**
1079 William St., Buffalo 6, N. Y.

CANADIAN ADDRESS:
P. O. Box 370, Station 19
Toronto, Ontario

Circle 198 on Reader Service Card

"Modern L.C.L. Handling In Holland"

(11 minutes, 16mm, black and white, sound) Gives valuable ideas to anyone faced with problem of handling large numbers of packages varying in size, weight.

Advertising and Sales Promotion Department
Clark Equipment Company
Industrial Truck Division
Battle Creek, Michigan

"Power For Your Industrial Trucks"

(22 minutes, 16mm, black and white, sound) Analyzes the present day power requirements of modern industrial trucks; fully discusses advantages of electric power; shows on-the-job demonstrations of many types of electric industrial trucks.

Storage Battery Division
Thomas A. Edison Industries
McGraw-Edison Co.,
51 Lakeside Avenue
West Orange, New Jersey

OVERHEAD EQUIPMENT

"Red-Strand Story"

(22½ minutes, 16mm, color sound) Story of production of wire for wire rope. Shows the many steps taken to maintain quality control.

Leschen Wire Rope Division
H. K. Porter Co., Inc.
2727 Hamilton Avenue
St. Louis 12, Missouri

"Up and Over"

(19 minutes, 16mm, black and white, sound) Elementary exposition of monorail and its application to industrial uses. Monorail crane applications covered also.

The American MonoRail Co.
1111 East 200th Street
Cleveland 17, Ohio

"Quality Unlimited"

(30 minutes, 16mm, color, sound) Deals with manufacture of wire rope. Emphasizes the intensive testing and inspecting necessary.

The Colorado Fuel & Iron Corp.
P.O. Box 1920
Denver 1, Colorado

"How To Harness A Ram"

(22 minutes, 35mm, slide film sound) Methods of utilizing oil-hydraulic power cylinders (rams) for industrial lifting, loading, positioning and material handling operations.

Globe Hoist Company
Queen Street & E. Mermaid Lane
Philadelphia 18, Pennsylvania

"Indian Paint—Wickwire Rope"

(30 minutes, 16mm, color, sound) Intricate processes involved in the fabrication of wire rope.

The Colorado Fuel & Iron Corp.
P.O. Box 1920
Denver 1, Colorado

"Take It Away"

(20 minutes, 16mm, black and white, sound) An educational film designed to show comparison of various slings, safe handling, and changes in loads at various angles of application. A good introduction film.

MacWhyte Wire Rope Co.

2940 Fourteenth Street
Kenosha, Wisconsin

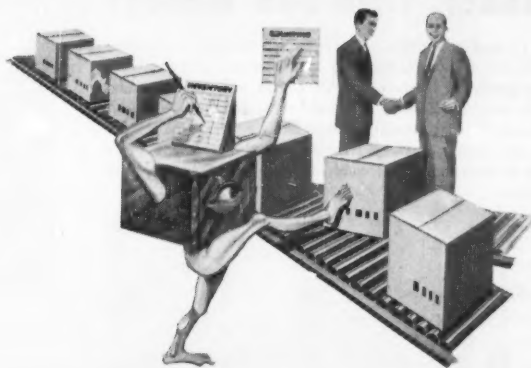
"Know Your Ropes"

(30 minutes, 16mm, color, sound) A technical film on manufacture, construction, and correct applications of industrial wire rope. Interesting sequences of cold drawing.

The Colorado Fuel & Iron Corp.
P.O. Box 1920
Denver 1, Colorado

Included in this listing are films taken from The Material Handling Institute's film catalog. The editors of MHE wish to express their thanks for this industry service.

NEW AUTOMATIC HANDLING OF PACKAGED GOODS



Reads printed codes automatically.

SELECTIVE automatic counting and sorting of MIXED products are now possible with Atronics 400 Series transistorized carton selector equipment. Your materials handling can be thoroughly modernized at low cost.

Make your operation a model for the industry ... a point of company pride ... and a new source of company profit. Write today for details.

ATRONIC PRODUCTS, INC.
BALA-CYNWYD, PENNA.
AN AFFILIATE OF GENERAL ATRONICS CORPORATION



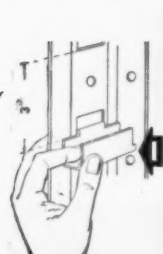
it's got

**what it takes to
make it the best
shelving buy!**

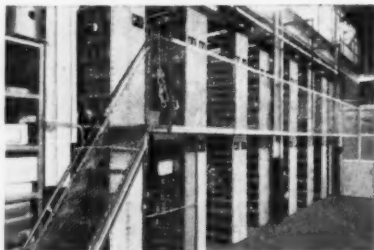
BORROUGHS STEEL SHELVING

saves labor, time and money!

Add 'em up! . . . quality materials — rugged construction — complete flexibility — exclusive Borroughs features . . . and you get the right answer to your particular shelving problem. Not only is Borroughs Shelving built to take tough, hard use, but Borroughs' "magic touch" Shelf Support Brackets make Borroughs Steel Shelving the most simple, most flexible, most rapidly assembled shelving on the market. Shelves can be installed or rearranged in seconds. Get the full story . . . send for catalog today.



**Insert 4 shelf support
brackets . . . no fum-
bling with studs, bolts,
nuts or lock washers.**



and then

**Tilt shelf into support
brackets . . . and shelf
is ready for loading.**



IMPORTANT

Except for the top shelf (2 bolts and 2 nuts), no other bolts or nuts are required for shelves . . . no special tools are needed to assemble units . . . any unit or shelf can be moved independently.

send for catalog

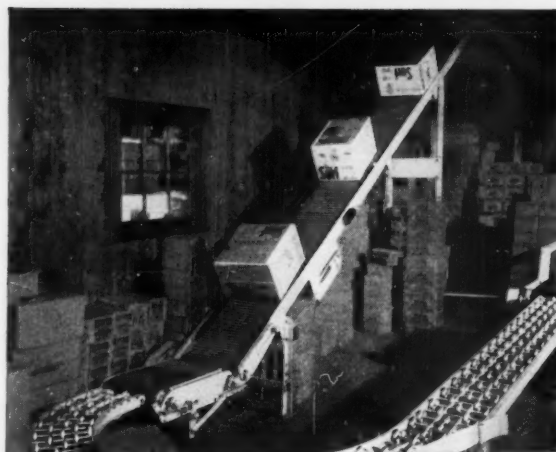
Represented in Sweet's Catalog,
Plant Engineering File 4G BO

BORROUGHS MANUFACTURING COMPANY
OF KALAMAZOO

A SUBSIDIARY OF THE AMERICAN METAL PRODUCTS COMPANY OF DETROIT

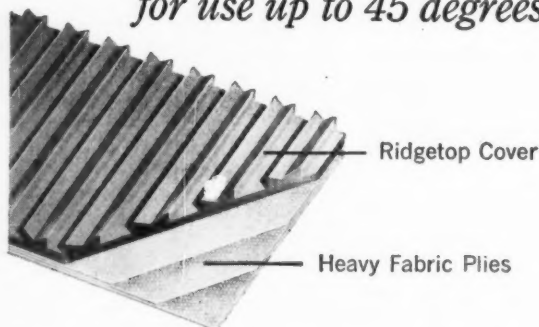
3022 NORTH BURDICK ST. **amp** KALAMAZOO, MICHIGAN

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154



STEEP INCLINE? *specify* **ridgetop**

for use up to 45 degrees!



Troubled with slippage on steep inclines? Or, perhaps you'd like to go steeper, to save floor space and belt length, yet can't because your present belt won't handle the angle? Then New York Rubber's Ridgetop is your answer!

The exclusive patented design of this ingenious belt incorporates a soft, pliable (yet tough) two-way toothed cover surface. It grabs the widest range of package sizes, shapes, weights and surfaces. The corrugated peak design provides the highest friction coefficient in this grade belt, resisting slippage on inclines up to 45°.

Other features include non-hardening cover material, and self-cleaning surface design (V-grooves flare as belt flexes over pulleys). Special oil-resistant Neoprene construction and a variety of covers are available on special order, although our standard cover will have the greatest gripping power.

For more information about this and other unique New York Rubber belts, write to Department MHE-10



NEW YORK RUBBER
CORPORATION

Established 1851

100 PARK AVENUE • NEW YORK 17, NEW YORK

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MATERIAL HANDLING ENGINEERING



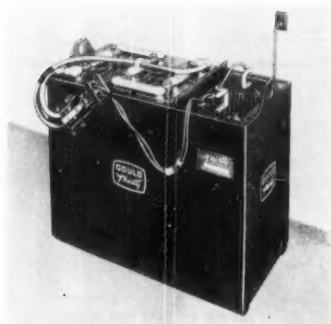
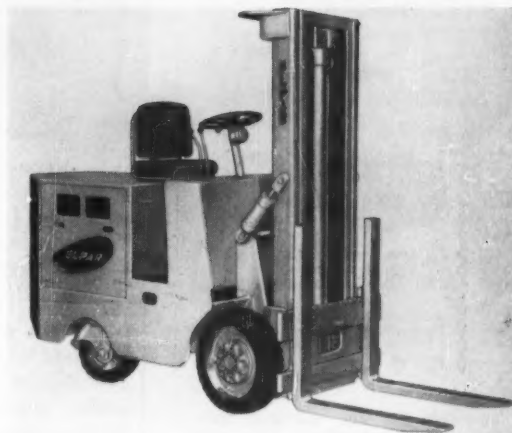
NEW EQUIPMENT SECTION

Speed Control Aids Inching

The new F-50T line of electric-power fork trucks features a carbon pile speed control system. According to the manufacturer, this "Acro-Smooth" system provides smooth travel and infinitely variable travel speeds. It also allows accurate inching coupled with fast acceleration. It is said that maintenance is reduced by eliminating speed contactors, switches, and resistance boxes. The F50-T line includes 4000, 5000, and 6000 pound models. The trucks require a right angle stacking aisle of only 93 inches plus the length of the load. An intersecting aisle can be under 6 feet.

The Elwell-Parker Electric Co.

Circle 220 on Reader Service Card for more information



Charger for Walkie Trucks

The Fulpowr power package provides automatic, self-contained charging for walkie-type electric fork trucks. Available in 12 and 18 volt assemblies the Fulpowr is a power package consisting of battery and charger. All battery dimensions are standard. Battery can be easily charged without being removed. The silicon type charger is available in single phase 120 or 240 volt, 60 cycle AC service that can be plugged into any standard outlet. To provide easy access to the cells, the charger rides on split tracks running the length of the battery cover. The hinged cover is split from the center, providing easy access to the battery.

Industrial Div. of Gould-National Batteries

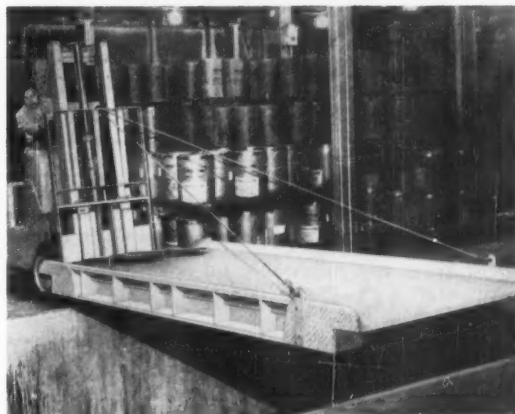
Circle 221 on Reader Service Card for more information

Portable Magnesium Bridge Speeds Handling

Removable magnesium bridges can connect your plant and warehouses, storage areas, etc. on opposite sides of rail spurs. They're so light they don't need power operation or counterbalances. And they're easy to move for railcar spotting or changing traffic flow. You can install them to existing docks and floors without expensive alterations. Magliner bridges feature non-slip traction surfaces and Tire-Saver safety curbs that prevent truck run-off and tire damage. They come in movable, drawbridge, and railbased models. Lengths range from 10 to 24 feet, widths from 58 to 70 inches, capacities from 7,000 to 16,000 pounds.

Magline Inc.

Circle 222 on Reader Service Card for more information



Circle 169 on Reader Service Card

MAKE MATERIAL HANDLING EASY



use
THERN

Hoists and Winches



Differential Hoists $\frac{1}{2}$ and 1 ton capacities.

Lever Hoists $\frac{1}{2}$ to $1\frac{1}{2}$ ton capacities.

Hand and Power Winches 1250 to 5,000 lb. capacities.

More heavy loads with ease! Use Thern Hoists and Winches. Many new features. Extra safe! Write for FREE catalog and low prices.

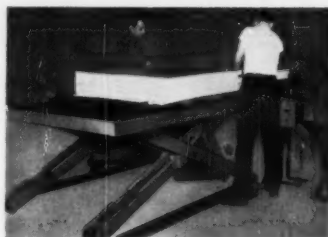


**THERN
MACHINE CO.**
3762 West 4th St.,
Winona, Minn.

NEW EQUIPMENT SECTION

Lift Feeds Production

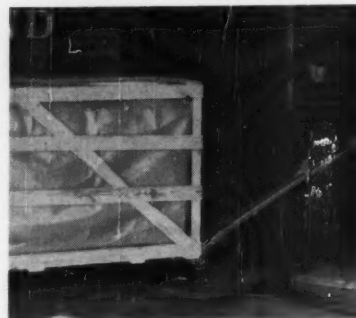
This new production lift will feed and receive from conveyors,



presses, stamping machines, paper machines, and other processing installations. It requires no installation, rolls into position as needed. The lift lowers to a complete-

Don't cut up this issue. If you need additional copies of any articles in this issue, a limited number are available free on request. Write the editor, MATERIAL HANDLING ENGINEERING, 812 Huron Rd., Cleveland, Ohio.

Circle 125 on Reader Service Card



MICRO LEVER DOLLY

a low cost safe tool
to move heavy objects

Eliminates the danger of tip-ups and high falls. Prevents back sprains, crushed fingers and pulled muscles.

Cuts moving time up to 45% on large bulky items.

Correct design permits lift blade to pry under objects flat to the floor.

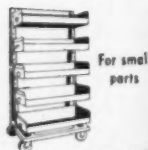
High leverage ratio between power and load.

Four sizes. Metal or rubber wheels. See local distributor or write to—

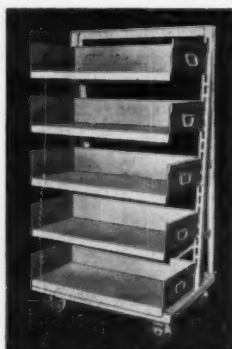
MICRON, INC., Bettendorf, Iowa

THE VER-T-RACK

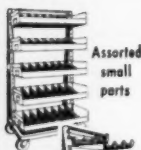
THE ACME OF VERSATILITY



For small parts



HEIGHT—65 $\frac{1}{2}$ " LENGTH — 35"
WIDTH — 24" CAPACITY 2000 lbs.



Assorted small parts



Gears, Wheels, Rings, etc.

- ELIMINATES MATERIAL DAMAGE
- REDUCES WORKER FATIGUE
- MAXIMUM EFFICIENCY AT MINIMUM COST

- EXPEDITES MATERIALS UP TO 60% FASTER
- SAVES MAN HOURS
- SAVES FLOOR SPACE
- GREATER SAFETY FACTOR

Equipped with 6" roller bearing steel wheel casters

VER-T-RACK can be handled with lift truck.

Trays are adjustable on **VER-T-RACK**

PRICE — \$49.50 Varied Accessories Extra

Slightly higher west of the Rockies Write today for descriptive literature



Circle 27 on Reader Service Card for more information

Casters to baby fragile loads...

- CERAMICS
- LIQUIDS
- DELICATE ASSEMBLIES
- MISSILE COMPONENTS

(yes, even fish bowls)



CUSH-N-AIRE

SHOCK ABSORBING CASTERS

Kid glove handling for handle-with-care cargoes ... indoors or outdoors.

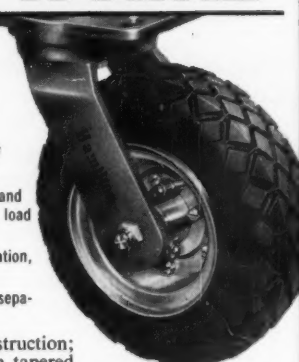
Pneumatic Tires for resiliency and flexibility. Adjust cushioning to load by varying air pressure!

Wide Base Rims for better flotation, longer tread life.

Bolted Hubs, 4 ply casings and separate inner tubes.

Forged steel caster construction; integral kingpin; precision tapered thrust bearing; plus many other features. Get *all* the facts about Cush-N-Aire and hundreds of other Hamilton casters.

Write for catalog today!



**THE
Hamilton
CASTER & MFG. CO.**
1575 Dixie Highway,
Hamilton, Ohio

Circle 93 on Reader Service Card for more information
MATERIAL HANDLING ENGINEERING

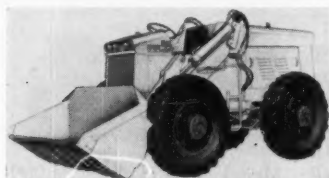
ly flat shape for easy storage. Automatic controls may be set to raise and lower to desired speeds.

Autoquip Corp.

Circle 224 on Reader Service Card

Loader Speeds Excavating

The Model TL-16 TractoLoader is designed to speed excavating-loading work in sand and gravel



yards and on construction jobs. The TL-16 has a capacity of 7000 pounds. Five buckets are available, ranging from $1\frac{1}{2}$ to 4 cubic yards. Depending on bucket size, dumping clearance under the bucket cutting edge ranges from 8 ft. $1\frac{1}{2}$ inches to 9 ft. 3 inches. Top travel speed of the TractoLoader in either forward or reverse is 27 mph.

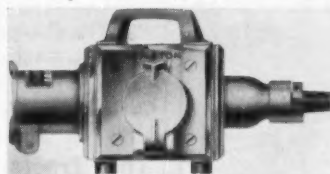
Allis-Chalmers Mfg. Co.,

Construction Machinery Div.

Circle 226 on Reader Service Card

Explosion Proof Tap

This single, portable current tap will operate three separate



sets of electrical apparatus at the same time in locations classified under Class I, Groups C and D with hazardous areas. The explosion-proof current tap has three branch receptacles, each employing the dead-end principle to isolate exposed contacts from live inner contacts for positive explosion-proof protection. Housing and covers are made of non-sparking material as is the carrying handle.

Appleton Electric Co.

Circle 227 on Reader Service Card

Dryer Truck

This dryer truck is designed for use in the ceramic industry. It features heavy duty spring type

casters that support the load gently. Top and bottom cross members of the truck are centered



to allow walk-in loading or unloading. Shelf mounting heights are completely adjustable.

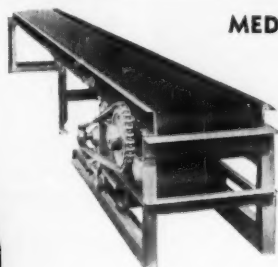
Wellington Machine Co.

Circle 228 on Reader Service Card

Automatic Chargers

You can recharge your 12-volt battery powered trucks in eight hours with AutoReg silicon rectifier equipment. Two new models of this plug-in charger have been announced. The Model AR1-8 charges batteries up to 300 amp-hr capacity; Model AR2-8 handles batteries up to 450 amp-hr capac-

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with Economical
ULTIMATE
Horizontal Roller
Bed Belt
Conveyors



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showing the simple and perfectly engineered Idler and Power Unit arrangement wherein perfect belt tension is obtained quickly. A most efficient straightaway conveyor. Also available on inclined units. Belt widths from 8" to 36" in 2" increments.

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Company

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City State

with "Package" Power unit attached. Demanding less horsepower, the floating action rollers increase belt and bearing life.

Widths from 8" to 36".

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WHY IT PAYS TO USE

Rubbair® Door

the true door —
not a curtain,



One of several Rubbair Door installations at the Strathmore Paper Co., West Springfield, Mass.



READ THIS ACTUAL CASE HISTORY—

"The installation of Rubbair Doors has really solved three problems for us," said Mr. J. S. Mudgett, Chief Engineer, Strathmore Paper Co., West Springfield, Mass. "The first problem was the necessity for a door that would permit a free flow of heavy fork-lift truck traffic without requiring a stop to mechanically operate a conventional type door. The second problem was considerable heat loss to open warehouse area which was reduced by fast closing action and air seals. The third problem was maintenance costs which have been reduced because of the flexibility of the door. Of course, other benefits have been realized such as safety for workmen as well as a considerable reduction of dust and dirt from the loading platform."

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RUBBAIR® DOOR DIVISION
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NEW EQUIPMENT SECTION

ity. The chargers plug into any standard 15-ampere, 115-volt, single-phase, 60 cycle outlet.

C & D Batteries, Inc.

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Tow Tractors Handle Transports

Three "Paymover" towing tractors have been designed to handle jet transports on the ground. Model T-225S has 22,500 pounds drawbar pull; Model T-245S has 24,000 pounds DBP; and T-300S has 30,000 pounds DBP. These new models have four-wheel-drive, front and/or coordinated steering, automatic transmission, and torque-converter drive. They are powered by International Harvester V-549 gasoline engines.

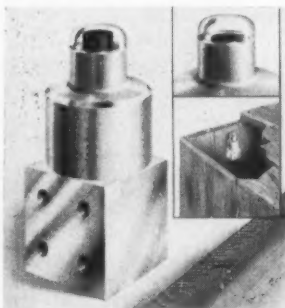
Frank G. Hough Co.

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How to Spot Shipping Damage

If you're troubled by goods being damaged before they reach consignee, V-dot indicators can help you pinpoint the source of the damage. Put them inside the package and they tell at a glance when shock has exceeded a predetermined limit. They come in models sensitive to



shock in any plane, or in one or two planes. They're reusable, and accurate within 5 per cent. Standard models are available from 5G to 75G sensitivity.

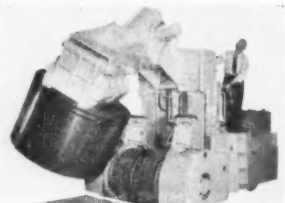
Inertia Switch, Inc.

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Magnetic Upender Moves 10-Ton Coils

Tinplate coils weighing 10 tons and more can be moved by means of a magnetic coil upender attachment. Principal components of the upender are a rubber-covered load ram which projects from the center of a powerful electro-magnet. This combination is mounted on a 45-degree rotator head. Rotator turns the coil to either a vertical or horizontal position. The new magnetic attachment increases efficiency of strip steel production by reducing to a minimum the damage to a tinplate coil since no clamping is needed to hold the coil while in transit.

Automatic Transportation Co.



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MATERIAL HANDLING ENGINEERING

Racks Need No Bolting



P-S 58 is a low-cost series of storage racks for general warehousing applications, says the manufacturer. The racks are shipped in two pieces, can be set up by hand, without bolting or welding. Small pieces have been eliminated. Vertical panels are built to specified heights and depths with slots spaced at intervals into which shelves are snapped and locked for required rack openings. Shelf capacities may be specified according to varying load requirements within individual racks.

Palmer-Shile Co.

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Bag Sewing Thread Is Acid-Proof

A golden strand clearly identifies this new acid-resistant thread for multiwall and textile waterproof bags. Called Golden-Ply, it's manufactured in a single construction for both the sewing machine needle and looper. This prevents cross-threading and makes it unnecessary for you to keep separate stocks of thread. Golden-Ply comes in 2½-pound cones, 20 cones to a carton. Sample 1-pound cones available on request.

Bemis Bro. Bag Co.

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NEW
safety for
dock traffic
NEW
operating ease
NEW
**RITE-
HITE**



manually operated MECHANICAL RAMP

New dynamic counterweight suspension of this Rite-Hite Model 72 eliminates the need for a ramp platform control lever. Where Model 72 is equipped with Rite-Hite's exclusive horizontal adjustment, the adjustment lever lies below dock surface when not in use. Thus, no levers protrude above the dock floor to impede traffic or endanger handling equipment and personnel.

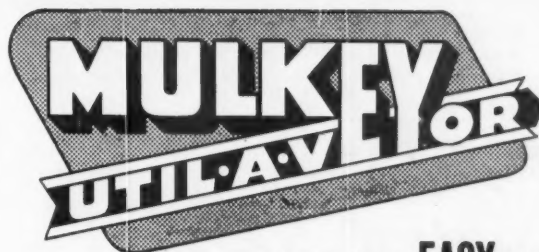
Rite-Hite dynamic counterweighting also makes it possible to actuate the ramp platform with almost effortless ease. The platform practically "floats" to up or down positions.

A new positive, adjustable locking mechanism locks the ramp platform level with the dock surface when desired, permitting dock traffic up to the ramp's rated capacity to travel across it freely. Available for Model 72 ramps purchased without the Rite-Hite horizontal adjustment feature.

For full details on this new Model 72 — and any other of the complete line of manually operated and truck-actuated Rite-Hite Ramps, all of 10 ton capacity — write today, Dept. F-99,

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DIVISION** **LOOMIS MACHINE COMPANY**
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SEPTEMBER, 1959



At last a sensible inexpensive portable floor to floor Conveyor! Enthusiastically accepted by the materials handling industry and especially adapted to industrial use.

This tubular chain and flight conveyor is the answer to many material movement problems. Basic 16 ft. length extendable by 8 ft. sections up to 40 ft. in length.

Ideal for floor to floor handling, car unloading, truck loading, package and carton movement as well as bulk material.

Lock Swivel Wheel Assembly is available as an accessory item at a nominal cost.

HORIZONTAL movement from...

station to station in and out of cars, trucks, docks. Mobile wheels afford quick movement to and from point of use. Handles loads up to 400 lbs.

Dealership Available!

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NEW EQUIPMENT SECTION

Lifting Clamp Introduced

The Bulldog line of steel lifting clamps has been recently introduced. This is a non-locking clamp, available in one-half ton, one ton, four ton, and seven ton capacities. Manufacturer says that

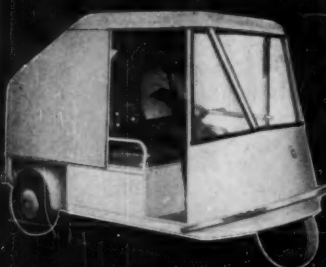


these clamps are light weight, compact and have extra-large jaws.

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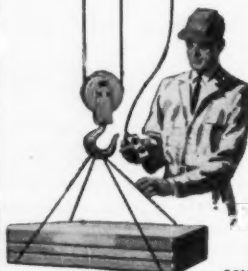
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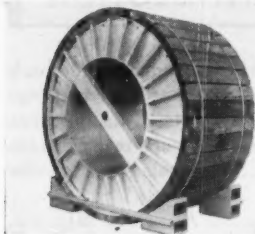
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MATERIAL HANDLING ENGINEERING

Reels Won't Roll in Transit



Retracto Chocks anchor wire and cable reels—or other cylindrical loads—to freight car and trailer floors. They work on both metal and wood floors, eliminating cumbersome blocking materials and speeding loading.

Just put the reel in position and engage the chock unit. Chocks are always under spring tension, which keeps them in position. Rubber friction surfaces on the bottom prevent slipping. Three sizes are available, for reels from 24 to 96 inches in diameter.

The McKenzie Engineering Co.

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Cart Made for Luggage Carrying



Here is a luggage carrier designed for use in air terminals, railroad and bus stations; the manufacturer also recommends its use as an all-around material handling cart. Called the "Handi-Kart," the unit is constructed of heavy

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Confusion's not amusing

when you're faced with the job of planning a material handling system or developing proper packaging for a product. In either case guesswork can only lead to wrong conclusions and hence to unsatisfactory results.

There's a model IMPACT-O-GRAPH with the proper "G" rating to answer all your questions regarding impacts, acceleration, deceleration, or the "ride" of material handling equipment. It is also widely used to pre-test for correct package design.

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Send for your free brochure giving detailed information on all Impact-O-Graph models. It is National Safe Transit approved. Leasing arrangements can be made.

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Here's the conveyor for those big warehouse jobs. Lengths from 20' to 50', belt widths of 14" to 30" with power lift and many other features.



A SERIES

A light duty conveyor that will save money in your plant. The Elton aluminum "A" series with the all purpose lift. Either end raises or lowers. Lengths from 6' to 22'.



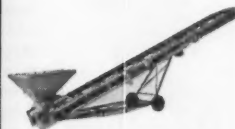
B SERIES

For general warehouse use these all purpose power lifts can't be beat. Lengths: 10' to 16', belts: 12" to 24", adjustable receiving and discharge ends.



F SERIES

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N SERIES

Stationary conveyors in a variety of belt widths with slider or roller beds. With all the accessories, here is an advanced design line of stationary conveyors.



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CHANTLAND COMPANY
HUMBOLDT, IOWA U.S.A.

Phone 326

Other types of conveyors also manufactured. All Elton conveyors have Hydro Crowned pulleys for better performance.

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Kenworth Mfg. Co.

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Belt-On-Roller Conveyor

A simplified horizontal belt-on-roller conveyor is designed to offer flexibility of handling of items of various sizes, shapes and weights. It will easily handle bags,



bores, cans, cartons, and drums. Series 904 in this conveyor line is for light to medium duty; Series 905 is for medium to heavy duty application. The 904 is offered in three power drives— $\frac{1}{2}$, $\frac{3}{4}$, and 1 hp capacities. Belt widths are 8, 10, 14, 16, 20, and 24 inches. 905 series power drives range up to 5 hp and belt widths from 12 through 48 inches, in 6-inch increments.

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MATERIAL HANDLING ENGINEERING

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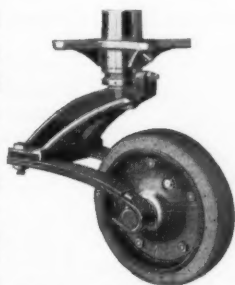
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For information on any item advertised in this magazine, use the Reader Service Card between pages 140 and 143.

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Department B
WELLINGTON, OHIO

The WELLINGTON MACHINE CO.
SINCE 1879

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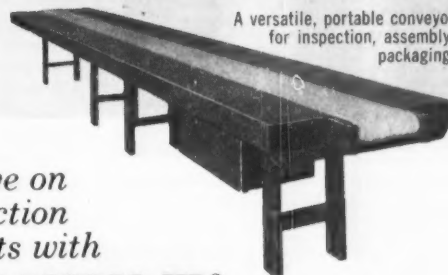
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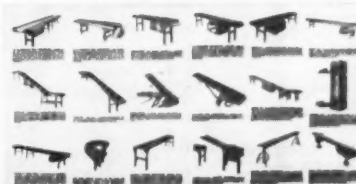
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• 84 Contributing, Consulting Editors

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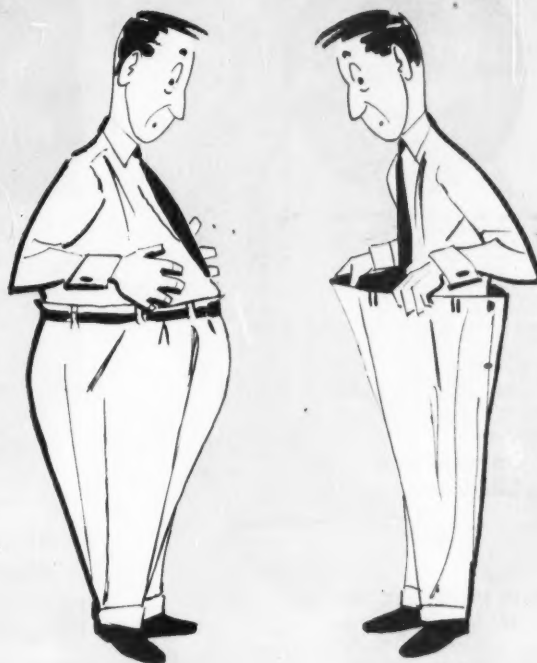
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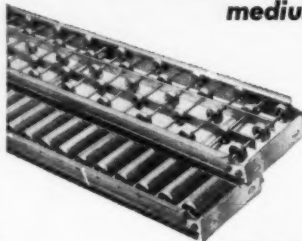


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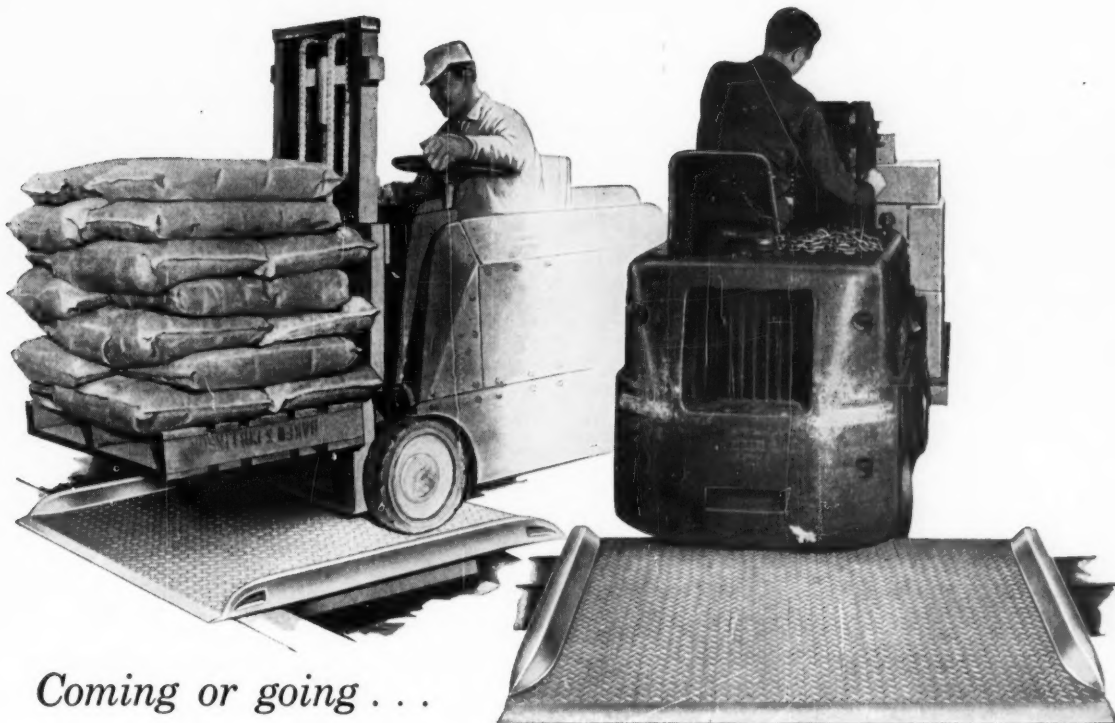


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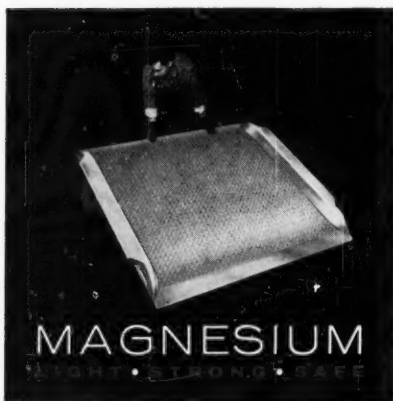
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